

THE IRON AGE

New York, September 23, 1926

ESTABLISHED 1855

VOL. 118, No. 13



Directors of the Credit Union at the Diamond Plant

Plan Wins Employees' Good Will

Industrial Relations Program in Moderate-Sized Plant Is
Comprehensive—Individual Instruction Given
Apprentices—Group Insurance and Mutual
Relief Association Are Features

BY BURNHAM FINNEY*

INDUSTRY humanized! This picture, above all others, has impressed itself upon the minds of foreign observers who in recent months have had an opportunity to study industrial conditions in the United States. It has been one of the chief features distinguishing American industrial life from that of Europe.

The era of good will now prevailing between most employers and employees in this country is not an accidental development. It has come as the logical result of years of solicitous effort on the part of industrial executives to provide healthful and pleasant surroundings for their workmen, to safeguard them against accidents, to pay them wages sufficiently ample for them to live in comfort and to give them every possible assistance in meeting their everyday problems without at the same time encroaching upon their personal lives.

This is an achievement of which every American may well be proud.

That such a program can be carried out by large corporations, employing thousands of men, commands admiration. It is, however, only when one studies medium-sized industrial units, with from 300 to 500 employees, that one fully comprehends the extent to which the spirit of cooperation is permeating American life.

Typical of the progressive programs now being

carried out by companies of moderate size is that of the Diamond Chain & Mfg. Co., Indianapolis. Here it has been found that the harmonious relationship between the management and the employees already has produced one outstanding beneficial result—the reduction of labor turnover to a minimum.

Workmen Eligible to \$1,000 in Group Life Insurance

To understand how the company has accomplished such results, incidentally at an incredibly small cost, it is necessary to outline its program. Those employees who have been in the service six months are eligible to participate in a group insurance plan. Workmen can take out a maximum of \$1,000, superintendents \$4,000, and executives \$6,000. The management of the insurance plan is entirely in the hands of the Diamond Chain Insurance Club, of which the officers and members are employees.

Premium payments are made on the basis of term insurance, so that the cost to policy holders is small, indeed almost inconsequential.

Men who have been in the employ of the company for a long time are rewarded for faithful service by being made eligible for special insurance arrangements not open to the newer workmen.

If a workman gives up his job, he may retain his insurance without converting it, provided that he has been on the payroll for two years and that he makes the regular premium payments to the treasurer of the

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insurance club. He has this privilege, no matter what the cause may be for his quitting work.

While participation in the insurance plan is in no wise compulsory, its benefits are such that few employees fail to take advantage of them.

Credit Union Is an Opportunity to Save and to Borrow

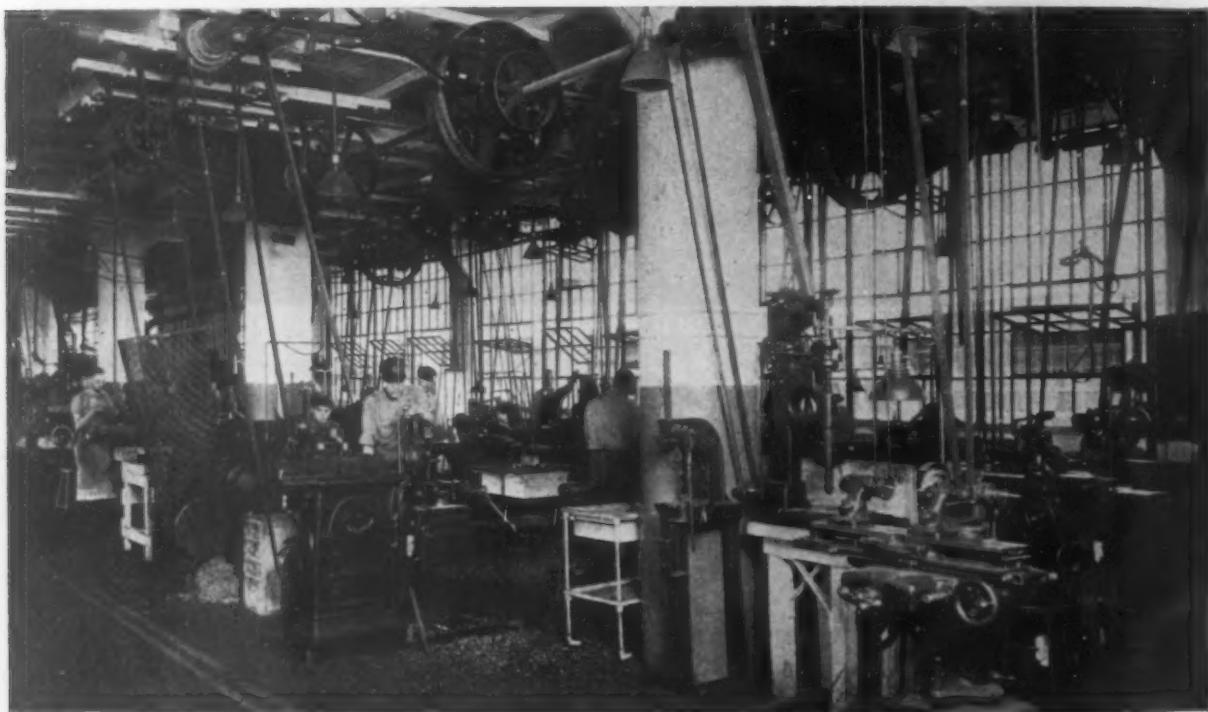
Another important agency the exclusive function of which is to be of service to the company's employees is the Diamond Chain Credit Union. This organization is incorporated and is operated under the State laws of Indiana. In its structure it somewhat resembles a building and loan association. Every Diamond Chain workman is invited to invest his savings by becoming a shareholder and thereby receiving annual dividends.

The money so secured from the shareholders is loaned exclusively to company employees. A workman may borrow a maximum of \$50 without collateral, but in asking for a greater sum he must have a guarantor. How the loans prove of assistance to employees is best

weeks annually. In order to qualify for the larger amount, an employee must make an average of \$25 a week.

Vacations are granted employees according to their term of service and the method of wage payment. Those paid weekly or monthly wages are given a week's vacation with pay after one year's employment, and two weeks after two years. Others working on an hourly basis receive one week's vacation annually after five years of service and two weeks after ten years.

Payment of wages is looked upon as an individual rather than a collective matter. Differentiation between old and new employees is provided for in the form of a service bonus which increases consistently according to the term of employment. The base rate, however, does not necessarily remain constant, but changes according to the character and the quality of the work. No daily records of employee performance are kept, since it is the duty of each supervisor (foreman) to discuss continually with the personnel director the question



Apprentices Are Given Individual Instruction on All the Different Types of Machines in the Shop. In this way they get a well rounded training, which would not be possible if they were assigned work in regular production

illustrated by an example. Many men borrow a sufficient amount of money to invest in a winter's supply of fuel at a time when coal is cheap. Repayment of the loan with moderate interest is made on a weekly basis.

Each new shareholder receives from the officers of the Credit Union a letter in which he is welcomed as a member. To call attention to the services rendered by the organization, bulletins are posted at various points about the plant.

Manifold benefits have accrued from the operation of the Credit Union. It has promoted thrift by making saving easy on a weekly plan. It has offered all workmen short-term credit, so that they can avoid being the prey of loan sharks. Managed solely by employees, it gives them an intelligent insight into the handling of money matters.

Mutual Relief Association Protects Workmen Against Illness

Immediately upon entering the company's service an employee is permitted to join the Mutual Relief Association. By paying dues of 50c. a month, he is insured an income of \$8 a week during illness. Payments of \$1 a month entitle the member to \$16 a week. Benefits, however, are limited to a maximum period of 13

of the wages, ability, capacity for work, etc., of each man in his department.

Apprentices Receive Individual Instruction

To secure promising young men as apprentices the company seeks high school graduates who have had a primary course in manual training. Whenever a boy is hired, an effort is made to have either his mother or father, or both, come to the plant office for an interview. In this way the seriousness of the work which the boy is undertaking is brought home to his parents.

They are made to feel that he has enrolled in a practical school of industry in which the instructors take a personal interest in their students.

At the time that an apprentice graduates, the company gives him a dinner, at which he is the guest of honor. His parents and all of the other apprentices are invited, and here again they get a real glimpse of the human side of industry.

Apprentices are not placed on machines used in regular production, where their opportunity is limited to learning how to operate only one or two machines. Instead, under the direct supervision of the machine shop foreman they are given individual instruction. He places them as helpers with skilled mechanics working on a particular kind of machine. As soon as the apprentices attain sufficient proficiency, they are given

machines of their own to operate under the general supervision of an experienced man. After they have become thoroughly familiar with details of those machines, they are given another type of machine and go through a similar process. The training continues until the apprentice has a good knowledge of all of the different kinds of machines.

Rapidity of Learning Determines Apprentice's Progress

Each apprentice is handled according to his ability. There is, therefore, no arbitrary length of time for learning to operate a particular machine. The rapidity of his learning determines his rate of progress.

After completing the work in the machine and tool departments, the apprentices are permitted to enter the engineering department to obtain practice in designing. While no outside study is required, apprentices are urged to keep up regular educational work during their leisure hours.

The regular training course for apprentices provides for four years of work divided into 16 periods of approximately 13 weeks each. The company pays the following wages during the training period:

	675 Hr.	Rate per Hr.	675 Hr.	Rate per Hr.
First period.....	25c.		Ninth period.....	34c.
Second period.....	25c.		Tenth period.....	36c.
Third period.....	25c.		Eleventh period.....	38c.
Fourth period.....	26c.		Twelfth period.....	40c.
Fifth period.....	27c.		Thirteenth period.....	42c.
Sixth period.....	28c.		Fourteenth period.....	44c.
Seventh period.....	30c.		Fifteenth period.....	46c.
Eighth period.....	32c.		Sixteenth period.....	48c.

Overtime work is paid for at regular overtime rates and also applies on the number of hours in each period, thus making it possible to reduce the length of each to considerably less than 13 weeks. High school graduates with technical training receive credit for Periods 3, 4, 5 and 6, thereby reducing their apprenticeship term appreciably.

Welfare work is carried on by the company through the office of the personnel director, but it is termed "mutual service." The word "welfare" implies charity; and many of the employees would resent any activities in their behalf which might be interpreted as charitable in nature. The service consists of extending help temporarily whenever unforeseen circumstances have made it impossible for a workman or a woman employee to get along without outside assistance.

Employees Interviewed When They Leave Company

Each employee, before leaving the company's service, is interviewed by an official. No matter what the cause of his departure, whether it be the opportunity to earn more money elsewhere or some other reason, he is made to feel that the company has been interested in his progress and that he will be accorded every chance to secure employment in the Diamond plant should he desire to return in the future.

The intensely personal aspect of this interview generally brings to light any differences between the em-

ployee and his fellow workmen and any dissatisfaction which the employee may feel with the position which he is giving up. Elimination of internal dissension and the promotion of good will toward the company are two practical benefits resulting from the interviews.

An employee who is off duty for any reason approved by the company is transferred to Department SX, and thereby is permitted to retain membership in the various employees' organizations merely by paying the dues.

Emergency Squad Includes Applicants Who Cannot Be Placed

If a man or woman applies for a position and none is available at the moment, he or she is placed in the "SE" or emergency squad. Should a regular employee be absent, one of the "SE" squad fills his position and is paid on an hourly basis. In this way applicants qualify for regular positions, and the company is able to reduce its surplus labor to a minimum.

Should any department find it necessary to reduce operations and, consequently, cut down its number of employees temporarily, the idle workmen are placed in the emergency squad.

There are many other activities included in the company's comprehensive program in behalf of its employees. Married men above 25 years of age and women supporting children or parents are given the preference in filling vacant positions. Applicants living in the vicinity of the factory also are given extra consideration.

No discrimination against any nationality, creed, or organization is a policy which has been adhered to consistently.

Other Features of Employment Policy

Proper working hours; regularity of employment; wages based on the buying power of the dollar; safety groups, whose object it is to see that the plant is a safe and healthful place in which to work and that employees observe safety rules; protection of the health of employees by means of a first aid nurse and physicians; legal aid and financial advice; a large recreation field with croquet, tennis, horseshoes, volleyball and basketball courts, a baseball and football field, and a cinder path for runners; a branch public library; a social and athletic club managed by employees—all these have been provided to add to the comfort and the security of the employees.

Here then is an insight into the policies of a moderate-sized American industrial plant. The setting up and maintenance of such an all-inclusive program have entailed much effort on the part of the executives of the Diamond Chain & Mfg. Co. But everyone of them testifies to the fine results, reflected in the greater initiative of employees, in the increased efficiency of the individual workers and in the spirit of cooperation and loyalty which permeates the entire institution.

Building Construction Makes Another Increase

In contrast with the declining tendency of preceding months, August construction in the 37 States east of the Rocky Mountains amounted to \$600,808,000, according to F. W. Dodge Corporation. This, the second largest monthly total ever recorded, was 2 per cent under the largest month—August, 1925. The increase over July was 18 per cent. New construction started in these 37 States during the eight months was \$4,247,808,000, an increase of 9 per cent over the first eight months of last year, which was itself a record.

Residential buildings, as for many months, led in August construction, with \$223,300,000, or 37 per cent. Public works and utilities at \$125,700,000, commercial buildings at \$81,350,000, industrial buildings at \$68,300,000, and educational buildings at \$42,100,000 were the principal other groups.

All previous records for construction were broken in the Central West, including States from Indiana and

Michigan on the east to Nebraska, Kansas and Oklahoma on the west. The amount of August construction was more than \$196,000,000, exceeding the previous month by 27 per cent and the corresponding month of 1925 by 57 per cent. August construction in this section was 33 per cent of the total for 37 States. Construction for the eight months in this section, however, was not quite 25 per cent of the total for 37 States. It stood at \$1,056,550,000, an increase of 9 per cent over last year.

The use of electricity in the foundry will be discussed by Phelan McShane, general engineer, Westinghouse Electric & Mfg. Co., at the first fall meeting of the Pittsburgh Foundrymen's Association in the assembly room, Fort Pitt Hotel, Pittsburgh, Monday evening, Sept. 20. The application of electricity to machinery, core ovens and furnaces will be explained. The association will entertain the foreign guests of the American Foundrymen's Association in Pittsburgh, Oct. 8 and 9, concluding with a banquet at the Fort Pitt Hotel, Saturday evening, Oct. 9.

Wheel Makers Expand Laboratory

Test Specimens Studied in New Metallographic Department—Add Equipment and Modify Methods for Physical Testing

BY ROGERS A. FISKE*

ENCOURAGED by what has been accomplished in its physical testing laboratory during the past two years, the Association of Manufacturers of Chilled Car Wheels has recently made important additions in equipment. The purpose of the laboratory, now, as in the past, is to further the efforts of members to obtain uniformity in the quality of their products and standardization of materials and design. Although operating strictly under the guidance of the association, the laboratory is located at the Sacramento Square plant of the Griffin Wheel Co., Chicago, where the facilities of a chemical laboratory are available to supplement microphotographing and physical testing equipment owned by the association.

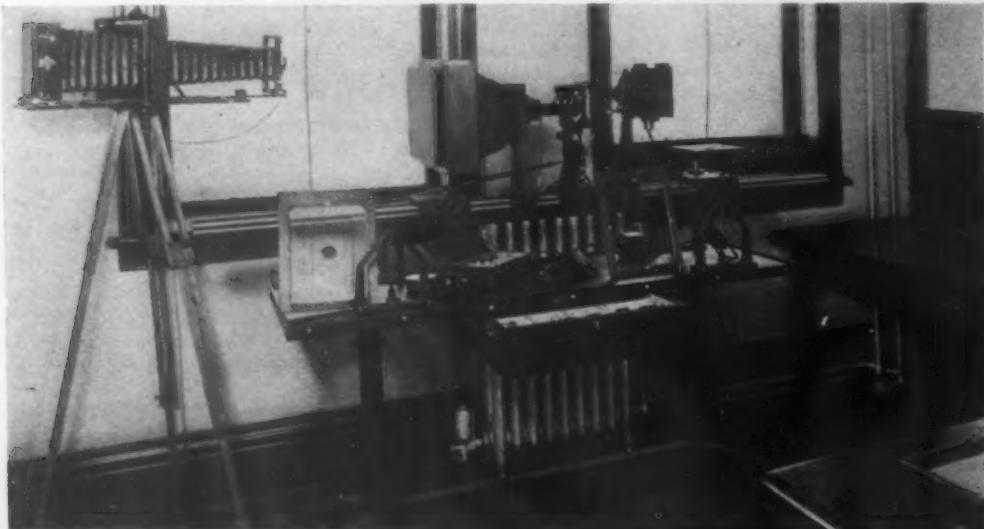
Progress in the carwheel industry has been almost wholly a record of improvement through experience. An empirical practice developed because the variables in-

The laboratory is divided into two main units, one in which physical tests are made and another devoted to the microscopic study of chilled and gray irons. The physical laboratory department, established in 1924, has been equipped more completely, while the microscopic laboratory is a recent innovation.

The physical laboratory is divided into two parts. One contains the furnaces used in the preparation of various mixtures of iron and in the study of annealing, and in the other section are located the physical testing machines and tools for the preparation of test pieces.

Wide Range of Test Specimens Made

A study of iron mixtures in the foundry is not satisfactory, because at least seven variables are present in the preparation of the elements which make up the final mixture. The problem can best be attacked if only



Complete Metallographic Records Are Being Made of Various Sections of Chilled Iron Carwheels

volved in casting carwheels are so numerous that it has not been possible under shop conditions, to calculate results to be expected from changes in their relationship. Records show that prior to 1835 gray iron was the favored material used in carwheel manufacture, but in that year the Washburn chilled-tread wheel made its appearance. Up to 1908 little further progress either in design or material had been made, largely because there had been no concerted move by manufacturers to improve the quality of the product. In that year when the association was organized, 308 wheel patterns were in use. Today only four patterns are employed, and this number is governed by the axle loading of the car. The patterns are designated as 650-lb., 700-lb., 750-lb., and 850-lb., and they are for use on 30-ton, 40-ton, 50-ton and 70-ton cars respectively.

Small Number of Patterns an Aid to Research

Failures of chilled carwheels occur from time to time, and the opening of the laboratory by the association early in 1924 was an acknowledgment that more exhaustive research was necessary. The previous reduction in the number of patterns formed the basis for a much closer study than otherwise would have been possible of service conditions affecting the 25,000,000 chilled wheels in use in the United States, Canada and Mexico.

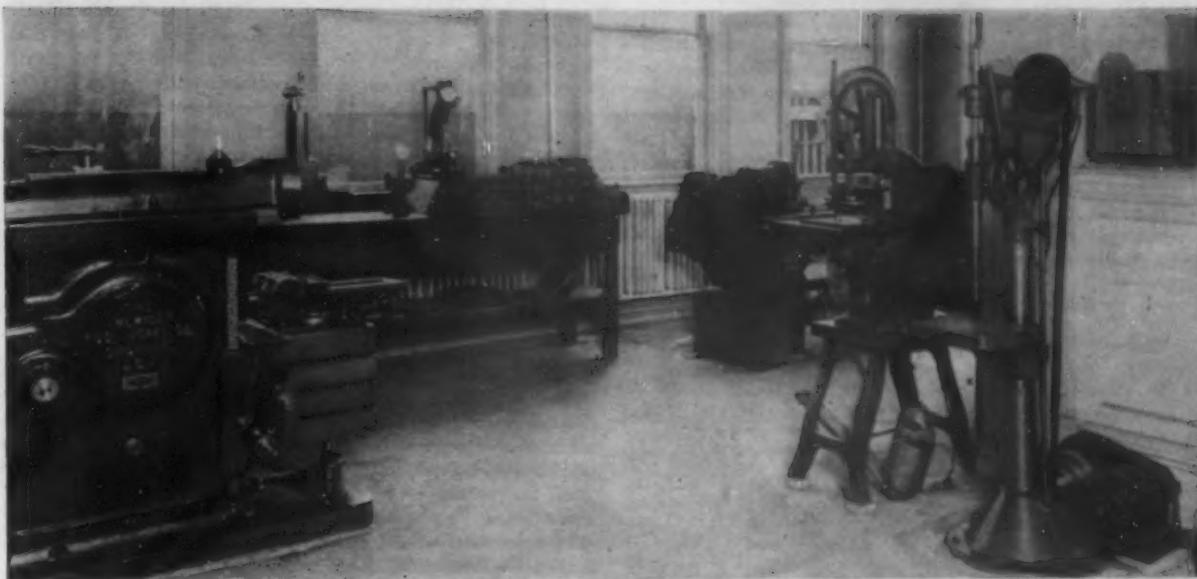
*Western editor THE IRON AGE, Chicago.

one or two or, at the most, three variables exist. Consequently the purpose of the laboratory, when installed in 1924, was to produce test specimens for a wide range of mixtures and at the same time hold the number of variables to a minimum. Results obtained from such tests have been plotted and have given makers of chilled wheels information necessary for the manufacture of an improved and more uniform product.

Iron is melted under controlled conditions in a high-frequency induction-type tilting furnace the original equipment of which has been modified in some respects on the basis of experience. Single-phase electric current, brought into the laboratory at 220 volts and 60 cycles, is stepped up by a transformer to 6600 volts and is then conducted across a spark gap made up of a carbon electrode and a mercury cup, both of which are incased in a water-cooled pot. At this point the current is at 15,000 cycles per second and 6600 volts. It is then impressed on a bank of condensers and is delivered to the furnace at 15,000 cycles and 10,000 volts.

Iron Melted in Graphite Crucible

The furnace consists of 40 turns of copper pipe wound around a silica tube. Inside of the tube has been placed a graphite crucible, and between the tube and the crucible is a space approximately 13-16 in. wide filled with lamp black which serves as an insulating



A Complete Set of Machine Tools Has Been Installed for Use in Preparing Test Specimens

material. A cover fits snugly over the top of the furnace and is so arranged that an inert gas can be supplied to the surface of the metal. In this way oxidation is prevented, and since there is no difficulty resulting from the products of combustion, an optical pyrometer can be used to obtain accurate readings of the temperature of the metal within the crucible. The molds are mounted directly in front of the furnace and at such a height that a minimum of time elapses during the pouring of the metal.

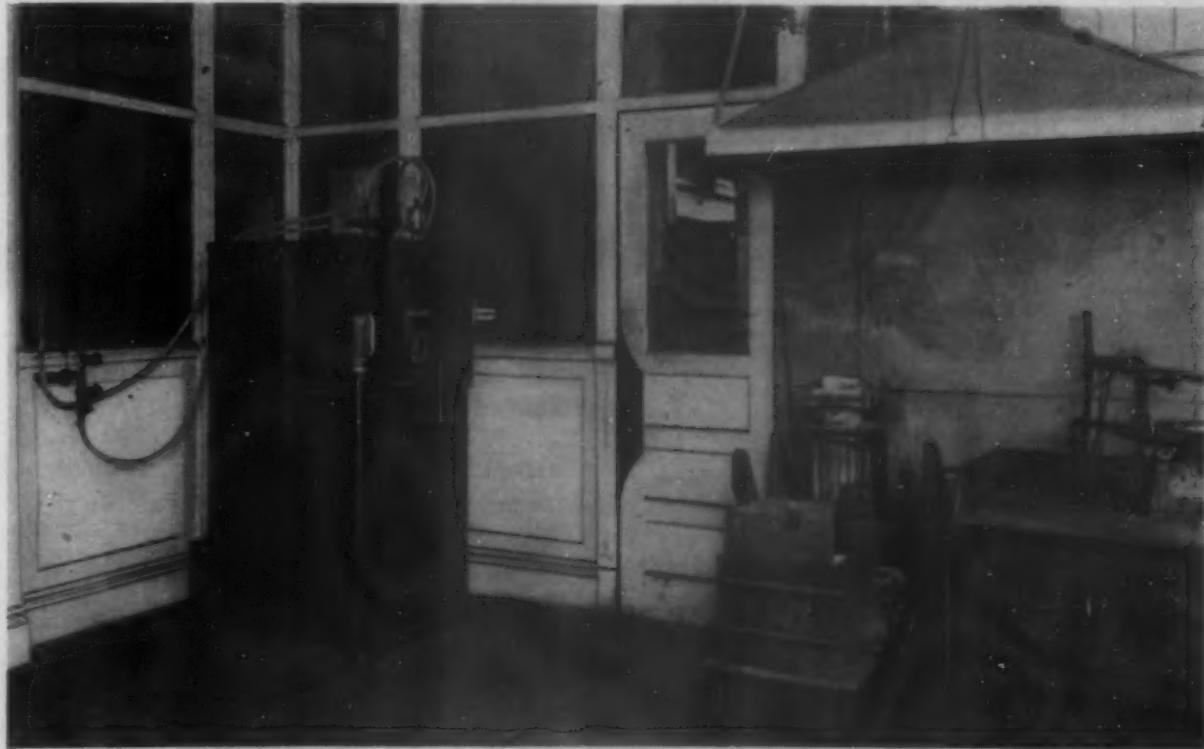
An essential requirement of the molds is that uncertainty as to the rate of cooling must be overcome. For that reason green sand molds cannot be used. The molds are made of baked oil sand similar to the ordinary baked-sand core, and each mold is covered by a pouring dish in order that the metal may be evenly distributed at a common temperature to the three test pieces which are made at each cast. The test pieces cast in each mold are a tension bar, a chilled test block for depth of chill, and a section resembling a small

wheel which is used in making measurements of wear resistance.

Electric Furnace Used for Annealing Experiments

The new equipment in this department includes an electric furnace, made by the Hevi Duty Electric Co., Milwaukee. It will be used for heat-treating tests to study the effect of the form and character of graphite in chilled and gray irons that are subjected to various temperatures during a given period of time. It is expected that the laboratory information gained through the use of the furnace will form the basis for better annealing practice in the chilled iron wheel foundry. The desired temperature is maintained in the annealing furnace by means of a Leeds & Northrup Co. potentiometer furnace controller. In addition, a manual control has been provided, which is constructed with 72 steps.

As equipped in 1924, the physical laboratory contained a three-screw 100,000-lb. Riehle Brothers testing



The High-Frequency Induction-Type Electric Furnace Allows Close Regulation of Temperature. The crucible is not removed from the furnace when pouring. At the left, a spark gap and a bank of condensers supply high frequency current used in the furnace

machine and a Niles-Bement-Pond Co. lathe to turn specimens for the tension test. For hardness tests, a Shore scleroscope and Brinell apparatus were provided. New equipment added to the department this summer consists of a portable grinder made by N. A. Strand & Co. and F. W. & John Barnes Co. drill press, an American Tool Works Co. shaper and a Racine Tool & Machine Co. band saw. The band saw, which is geared down to 60 ft. per min., is used to cut out samples for microscopic examination. These machine tools are all individually motor-driven.

Develop Own Form of Tension Test Bar

It is interesting to note that when specimens which undergo the tension test were turned down according to the specifications for steel, they invariably ruptured at either one shoulder or the other and outside of the gage marks. This difficulty was overcome by turning the test specimens to the desired diameter at the center and between the gage marks but using a 10½-in. radius in place of the usual 1-2 in. fillet. Hardness tests may now be made by means of Rockwell apparatus which is newly acquired.

Metallographic equipment consists of a Bausch & Lomb unit fitted with an incandescent lamp with a horizontal ribbon filament. This provides a uniform light so that either observations or photographs of various specimens will be taken at equal intensity. The microscope is of the inverted type, and it is not necessary to mount the sample with opposed parallel surfaces. A specimen polishing machine, made by the Warner & Swasey Co., consists of four wheels, a 100-mesh grinding wheel and three lapping wheels.

Standardized Practice Facilitates Comparison of Metallographs

Great care has been taken in the selection and operation of the microscopic equipment to insure uniform

results when taking photographs of various specimens at different times. It has been pointed out that the light is uniform. Film and contact print development solutions are all standardized, and a chart indicates to the operator the length of development time required in accordance with the temperature of his solution. Films of a uniform grade are used, and the time of exposure is standard.

The exercise of care in these respects is especially important in making a series of metallographs of various sections of the wheel structure. For instance, a series of photographs is now being taken across a section cut from a wheel plate which may vary from $\frac{1}{2}$ to $1\frac{1}{2}$ in. in width. Since the magnification is 100 diameters, it is readily seen that a large number of photographs must be taken in order to cover the full width of the plate. Later the photographs are mounted end-to-end so that a complete metallograph of the cross-section of the plate is laid before the investigator. Thus uniformity of photographic work is essential in order that the intensity of high lights and definition in the prints may be the same. This point is also stressed because in some cases a specimen is etched with different chemicals to show various elements that are being studied. Various groups of photographs representing several full cross-sections at 100 diameters are then mounted one above the other so that at any given point in the cross-section the picture of the elements contained in it can be observed. A dark room is completely equipped for the convenience of the operator, and a feature of its construction is a labyrinth entrance, which admits air to the room but eliminates light from outside sources.

The men directly in charge of the laboratory are G. E. Doke, president and secretary of the association, F. K. Vial, consulting engineer for the association and vice-president and chief engineer Griffin Wheel Co., and A. D. Whipple, assistant consulting engineer for the association.

Program Arranged for Convention of Steel Construction Institute

The American Institute of Steel Construction, Inc., 285 Madison Avenue, New York, has announced the program for its fourth annual convention, which will be held at White Sulphur Springs, W. Va., Oct. 26 to 30. Opening Tuesday morning, Oct. 26, with an address of welcome by C. Edwin Michael, president Virginia Bridge & Iron Co., Roanoke, Va., the convention will run through the remainder of the week.

Among the addresses scheduled are the following:

Structural Steel and Its Relation to Competition, by John A. Crook, president Denver Steel & Iron Works Co., Denver, Colo.

Fundamentals of Welding and Their Possible Application to Structural Steel, by William Sparagen, secretary Division of Engineering and Industrial Research, National Research Council.

Salesmanship and Broader Markets, by E. St. Elmo Lewis, advertising and merchandising expert, Detroit.

Corrosion as Related to Structural Steel, with name of speaker to be announced later.

Steel for Strength and Permanence, by Dr. George F. Swain, professor of civil engineering Harvard University.

Research Investigation in Connection with the Structural Steel Industry, by Milo S. Ketchum, dean and director College of Engineering and Engineering Experiment Station of University of Illinois.

Some Possible Economies in Steel Construction, by C. R. Young, professor of structural engineering University of Toronto, Toronto, Ont.

Better Architectural Design in Steel Bridges, by Wilbur J. Watson, president Watson Engineering Co., Cleveland.

Marketing and Merchandising as Applied to the Steel Industry, by Francis H. Sisson, vice-president Guaranty Trust Co., New York.

Architectural Design of the Future, by Harvey Wiley Corbett, architect, member of the firm of Helmle & Corbett, New York.

The Fireproofing of Structural Steel, by Rudolph P. Miller, consulting engineer, New York.

The Structural Steel Industry and Its Future Prospects, by H. A. Fitch, Kansas City Structural Steel Co., Kansas

City, Mo.; Horace G. Miller, president Union Iron Works of Los Angeles, Los Angeles, Cal.; W. S. Mosher, president Mosher Steel & Machinery Co., Dallas, Tex.

There will be entertainment features, including golf, and a "get-together" dinner Saturday evening, Oct. 30, at which C. M. Denise, McClintic-Marshall Co., Pittsburgh, will be toastmaster.

Auto Accessory Trade Show to Be Held at Chicago

The Automotive Accessories Association, 123 West Madison Street, Chicago, has completed plans for an auto accessory trade show which will be held in the Chicago Armory, Sixteenth Street and Michigan Avenue, Nov. 8 to 13. A total floor space of 22,000 sq. ft. will be used by 150 exhibitors of auto parts accessories, supplies and equipment. Directors of the association are: S. M. Dover, Doray Lamp Co., Chicago; H. J. Goldblatt, Arrow-Meter Co., Chicago; Lewis Chaps, United States Auto Lamp Co., New York; Ben Warner, Warner Sales Co., Chicago, and Sol Heyman, Fremont Mfg. Co., Fremont, Ohio.

American Welding Society Program

Tentative plans for the annual fall meeting of the American Welding Society at Buffalo Nov. 17, 18 and 19, have been announced. An exhibition of welding equipment will be held in conjunction with the meeting. Technical sessions will cover such subjects as, "The Design and Development of Welding Apparatus," "Organization of Welding on the Railroads," "Welding of Locomotive Parts," "Welding Science in the Engineering Curriculum of Universities," "Arc Welding in a Gaseous Atmosphere."

Entertainment features will include a trip to Niagara Falls, followed by a buffet supper on the Canadian side. A dinner dance will be held Thursday evening, Nov. 18, at the Hotel Statler, Buffalo.

Heat Treatment Improves Bronzes

Modern Methods for the Control of Crystal Structure in Castings—Effect on Aluminum Bronze

BY N. K. B. PATCH*

THE heat treatment of steels is an art which today is well understood and the production of the necessary physical properties in many machinery parts would be impossible were it not for this process, now so highly perfected.

The annealing of the many non-ferrous materials in the process of rolling or drawing in the modern brass rolling mill is standard practice. This has long been known and through careful research and study has now become an essential scientific step in the process of the production of rolled or drawn wire, sheet or tube.

The heat treatment of such materials, in order to produce a recrystallization that will develop a given improvement in physical characteristics to meet a definite need, is a highly scientific process and is now rapidly becoming better understood by metallurgists and engineers.

Many of the best metallurgists are still of the opinion that a casting of a given alloy or mixture of non-ferrous metals will be uniformly satisfactory for a given service, if the chemical content is held within narrow limits and impurities are kept below a specified minimum. Yet today we have chill cast bronzes which differ from the same alloy sand cast just as the chill cast iron differs from the sand cast iron of the same analysis. This is one example of the difference in the castings, due to difference in crystal structure or grain size, or both. Controlled by one who understands it, this chill casting process alone opens up new fields for bronze and brass castings and solves many of the difficulties heretofore baffling to the designers of mechanical units.

Few engineers are yet aware that this development of the desired crystal structure by heat treatment can be applied to castings in bronze and brass with beneficial results. This is a new application and must be most scientifically done to effect the change definitely needed.

Heat treatment is a step farther in the control of the crystal structure of these metals to insure uniformity of characteristics and service. Heat treatment of the bronzes consists, essentially, of the same methods as in the steels, namely, heating to a predetermined temperature and quenching, heating again to the proper temperature and drawing. Here, however, color is no longer a guide, as it is in many of the steels. The same powerful influence upon the resulting product

that we find in many steels is found here in the effect of the admixtures of small amounts of ingredients other than those usually found in a given specification.

This treatment of the cast bronzes is much more delicate than may be supposed, and the study of this has revealed the importance of scientific, accurate control along much closer limits than is today in vogue with the steels. It is therefore obvious that only foundries equipped with laboratories which are manned by skilled men having the requisite experience can be trusted to produce a uniform product of this kind. Heat treatment of bronze and brass castings, applied intelligently, is rapidly coming to the fore, but to attempt this with inadequate information at hand can only result in failure.

The Lumen Bearing Co. has made exhaustive studies in the application of the heat treatment process to cast bronze and brass and, in meeting the needs of modern industry for long wearing bearings or gears, the usefulness of this research is daily more and more apparent.

Many bronzes respond to this treatment. Some gain much by its application, others only change in a minor way, but frequently this minor change is sufficient, if scientifically controlled, to improve the service many fold. Aluminum bronze responds to scientific heat treatment to a remarkable degree. Fig. 1 is a photomicrograph of a piece of Lumen alloy, 11-C, as sand cast, this aluminum bronze having 10 per cent of aluminum and also 1 per cent of iron. Fig. 2 represents this bronze after heat treatment. The crystal structure is obviously materially changed.

The more interesting change to the engineer is that of the physical characteristics, as given in the table for both the sand cast and sand cast after heat treatment. These values are typical, although they may vary in the case of the heat-treated piece by a variation in the heat treatment. By varying the heat treatment scientifically, a wide range of changes in structure and strengths may be developed.

The United States Government has recognized the value of this practice as applied to bronze castings, and the American Society for Testing Materials has indicated the importance of it by including in the tentative specifications for aluminum bronze castings figures for the heat-treated as well as the sand cast. These specifications were adopted as tentative at the last convention held at Atlantic City in June of this year.

Many of the vital details in connection with the

*Secretary Lumen Bearing Co., Buffalo.



Fig. 1—Lumen Alloy No. 11-C. Sand Cast. X 200. Etched with $\text{FeCl}_3 + \text{HCl}$

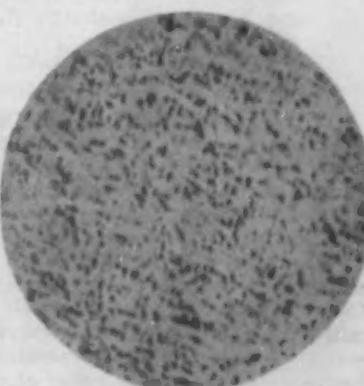


Fig. 2—Lumen Alloy No. 11-C After Final Heat Treatment (Quenching and Annealing). X 200. Etched with $\text{FeCl}_3 + \text{HCl}$

application of heat treatment to cast bronzes have only been developed to this modern perfection within the last few months, one of these being the method of insuring absolute uniformity of structure in thousands of pieces, regardless of size or shape.

Many engineers do not appreciate the importance of crystal size and structure of the cast bronzes. When it is pointed out that the difference between a good worm gear and a poor one is very largely one of type of structure, hardness of crystals and strengths, the importance of controlling these intelligently is apparent. Again, a good bearing in a given alloy may be markedly better if the structure is maintained within accurate limits. The control of the crystal structure of cast bronzes is now regularly applied to many castings such as worm gears for motor trucks and buses, special high duty bearings and bronze spiral gears.

COPY STEEL CORPORATION

German Steel Trust Modeled After American Company but Has Much Smaller Capitalization

Die Vereinigte Stahlwerke Aktiengesellschaft (the United Steel Works Corporation), a merger of leading Rhenish-Westphalian companies organized early this year at Düsseldorf, Germany, was patterned after the United States Steel Corporation, according to a brochure recently distributed by Schwarz, Goldschmidt & Co., Berlin, Germany. On this point the pamphlet says, in part:

"If the creation of this great organization need not be regarded as a dangerous experiment, as a jump in the dark, it is because there was at hand a great model after which it could be patterned. In surveying the technical and business prospects of the new industrial organization the genesis and later development of this precursor are highly reassuring. This forerunner is the United States Steel Corporation."

The size of the United Steel Works Corporation is indicated by its percentage of the quotas established by various German cartels. In raw steel its share is 46.82 per cent of the total. In semi-finished steel its proportion is 56.49 per cent; in pipe 50.2 per cent; in structural shapes 28.04 per cent; in railroad track material, principally rails, 55.77 per cent; in bars 41.94 per cent; in wire rods 38.75 per cent; in plates 47.13 per cent.

In the Rhenish-Westphalian coal syndicate the new corporation's quota is approximately 22 per cent of the total.

The United Steel Works Corporation grew out of a merger of the following large industries of the Ruhr:

1. Rhein-Elbe-Union, including
 - (a) Deutsch-Luxemburgische Bergwerks und Hütten A. G.
 - (b) Gelsenkirchener Bergwerks A. G.
 - (c) Bochumer Verein für Bergbau und Gussstahlfabrikation.
2. Phoenix A. G. für Bergbau und Hüttenbetrieb; with the Vereinigte Stahlwerke van der Zypen und Wissener Eisenhütten A. G.
3. Reinische Stahlwerke A. G.
4. The Thyssen group.

After its organization, the Charlottenhütte A. G. in Niederschelden and the Bergische Stahlindustrie were added. Likewise a part of the works of the Stumm company was leased and placed under the management of the United Steel Works Corporation. Later the Rombacher Hütte was acquired.

The properties of the United Steel Works Corporation include 85 blast furnaces, 27 converters and 157 open-hearth furnaces, as well as numerous rolling mills, the capacity of which exceeds that of the steel works. In addition, the corporation has iron and steel foundries and a large number of plants for the manufacture of finished products fabricated from iron and steel.

Table of Physical Properties of Non-Treated and Heat-Treated Aluminum Bronze Castings

	Sand Cast	Sand Cast, Heat-Treated
Ultimate tensile strength, lb. per sq. in.	60 to 75,000	80 to 93,000
Proportional limit in tension, lb. per sq. in.	10 to 11,000	28 to 40,000
Yield point in tension, lb. per sq. in.	22 to 26,000	50 to 60,000
Elongation in 2-in. per cent....	15 to 25	4 to 10
Compression of 0.001 in. at.....	16 to 19,000	54,000
Compression of 0.1 in. at.....	75 to 83,000	
Compression under 100,000-lb. load	0.13 to 0.16 in.	0.05 in.
Brinell hardness number*.....	90 to 100	170 to 200

*Brinell or sand cast taken at a 500-kg. load whereas heat-treated and being so much harder, it was necessary to use a 2000-kg. load to have sufficient impression.

It is true, says the author, that the United Steel Works Corporation was not a consolidation of 147 separate plants, as was the case when the United States Steel Corporation was formed, but the German company took over a larger number of blast furnaces and other important producing units in good running condition.

It is an important point in favor of the German corporation, the pamphlet states, that its collective plants, as a result of improvements in equipment which the German works were forced to make because of the singular economic conditions of the past decade, are today preponderantly modern. This could not be said of the United States Steel Corporation in 1901, even taking into account the state of technique in the industry at that time. Furthermore, if one considers that the United States Steel Corporation was formed with a total capital stock and bonded debt of nearly \$1,400,000,000 (5,880,000,000 marks), while the capital stock of the United Steel Works Corporation is only 800,000,000 marks and its entire obligations amount to less than 1,500,000,000 marks, it becomes apparent, says the pamphlet, that the new German company was organized on a much more favorable basis than the American corporation.

Lake Superior Association Issues Data on Iron Ore

A directory of the Lake Superior iron ore mines and a large amount of statistical information covering the iron ore industry in that district are contained in a booklet just issued by the Lake Superior Iron Ore Association, Union Trust Building, Cleveland. The directory includes the names of mining companies, listing the mines they operate and their location, the names of the officers of the companies, mine superintendents and sales agents. Whether the mine is open pit or underground, active or inactive, and the method of treating the ore before shipment is given.

The statistical section shows annual shipments from all mines for the past 10 years, total shipments prior to 1916, annual shipments by ranges and by ports, all rail shipments, receipts at Lake Erie and other ports, ore on docks May 1 and Dec. 1, shipments from mines in United States other than from the Lake Superior district and imports of iron ore by countries.

Distribution of Pipe Fittings

Current output of the Walworth Co., maker of pipe fittings, is running about 23 per cent ahead of last year, while inventories are approximately 22 per cent less than at the beginning of 1926. The company recently completed a study to determine the outlet of its fittings. It disclosed that 23 per cent went into new buildings, replacements and repairs in old buildings, while 77 per cent went into industries such as railroads, oil refineries, pipe lines, oil production fields, power houses, chemical plants and manufacturers in general.

Though Down, Britain Is Not Out

Her Industrial Problems as Seen by the American Management Mission—British Views of the American "Secret"—More Consolidations Are Likely

BY JOHN CALDER

LONDON, Aug. 31.—England is a moving sight this summer to an American observer. Right before one's eyes the British Lion, still licking its war wounds, is attacked ferociously by some of its own cubs and does not even box their ears! Here is a land of toleration to which we are strangers. Here she stands, "with the finest statesmen and the rottenest coffee in the world," as Will Rogers told a London audience recently.

Imperturbably she nurses her injuries, economic and social, declining to be stamped by unreasonable sectional demands in or out of Parliament, but by no means blind to the vulnerable joints in her social armor.

A Serious Industrial Plight

Due to a variety of internal and external causes, and greatly accelerated by the coal stoppage, England's exports, on which she now lives and moves and has her being, are very seriously decreased. Her iron and steel production is arrested, her shipbuilding moribund and her shipping industry languishing for lack of freights.

Yet her huge drink and betting bills remain undiminished, and she goes on "playing cricket," literally and spiritually, amid great tribulations, paying her debts, keeping her word, taxing her people to the limit—despite shortage of homes, peaceful trades lacking fuel, unsocial objectives of angry radicals and die-hard attitudes on the part of some of the privileged I have met.

The steel and shipbuilding industries, in which readers of THE IRON AGE are especially interested, will be dealt with in a separate article, but here we set down the summary of impressions of the Northern, Midland and Southern counties this summer, when both their best and their second rate industrial administration was inspected.

The National Psychology

To one who spent his youth in England during the era of Disraeli and Gladstone great political changes are apparent. A Conservative premier, for instance, more liberal in social policy and practice than Glad-

stone ever thought to be, and an administration dreading the connotation of the word "nationalization," but handing a hundred million dollars to miners and mine owners for pocket money, while they were making up their minds whether to shake hands or to fight each other, are characteristic. England has certain sacred words and "nationalization" is not yet canonized. So long as the label is left off, you may go as far as you can.

Here she stands, seeking her place in the sun again and ultimately compelling the unwise and unsocial on both sides of her payroll and on the side lines to yield to that apparently unorganized common sense which always saves England in extremity. So uncommon is it in some other countries that it is attacked as hypocrisy or perfidy. To the French, in particular, the illogicality of "the Englishman in a hole" is a standing grievance—some times positively maddening.

Unemployment More Serious

Unemployment all over England rapidly increased with the disappearance of artificial conditions, such as the occupation of the Ruhr and strikes in the United States, but making due allowance for these and for the 450,000 who, for various other reasons, were idle in pre-war years, the 1,600,000 unemployed this summer are a decided increase, and this figure takes no account of people who have left work due to trade disputes.

An examination of the various factors involved leads us to believe that if it is to absorb its increasing working population, British industry will have to grow even more rapidly than in the years immediately preceding the war; for, in the first place, it is quite evident that emigration from England will not be restored to its former dimensions until a new ethic is adopted by the nations of the world and the present restrictions upon migrations removed. In the second place, the revelation of the amount of unemployment existing in a year of normal trade activity will inevitably raise the standard of employment which society will strive to attain. Serious obstacles are in the way.

Many exporting British lines of industry are now

M R. CALDER'S first article, based on his observations as a member of the American Management Mission, which made industrial investigations in a tour of Europe last summer, appeared in THE IRON AGE of Sept. 2. It was a clear-cut analysis of the coal mining situation in Great Britain. Mr. Calder's opinion, pungently expressed, was, in brief, that both sides had lost the strike, while the public loss, in manifold ways, had been enormous.

This second article deals with the British industrial problem as a whole, and finds that while it is serious, it is by no means hopeless. In a third article Mr. Calder summarizes the results of a similar inquiry in France, and a fourth is devoted to Italy and Mussolini. A visit to the International Labor Office at Geneva showed the work there to be in highly capable hands, as told in the fifth article. In the sixth the British steel and shipbuilding industries are shown as depressed but not defeated.



heavily weighted by increased foreign competition, and this has led to a change in the character of the exports, the finished product and the highly specialized product having become relatively more important. Even in the case of the latter the difficulty of maintaining the British export trade seems to be growing rather than diminishing, due, we believe, to the disproportionate rise in the cost of supply, which in its turn arises from abnormal rise in cost of labor and production, in cost of distribution and in the heavier overhead in general. Hourly wages are still twice pre-war figures, while weekly earnings are but 75 per cent greater due to failure to increase efficiency in proportion to the reduction in hours.

Continental competitors enjoy a triple advantage over British concerns, viz., lower wages, longer working day, and more elastic conditions of work—not to speak of the much heavier local and national taxes on industry in England. The lesson from England's experience is that of the great difficulties created when one country attempts to raise its standard of living considerably above that of competing countries with similar geographical and industrial features.

Employer-Employee Investigations *

These facts were brought home to the workers of Great Britain by a joint investigating committee of employers and union representatives in shipbuilding and allied crafts which went abroad to the Continent for the purpose; but opposition to "payment by results" and the most efficient utilization of new machinery is still in evidence, as well as suicidal quarrels over demarcation in trades.

The shipbuilding joint committee has already agreed to prevent strikes and lockouts and to avoid determining wages by the conflict of two forces, each operating blindly and represented by organizations on both sides which admit no right except that of might. In its very dull condition British shipbuilding has not been able to avail itself of these agreements by which the numerous other crafts in different industries would greatly profit.

The Industrial Courts act of 1919 implicitly recognizes the importance of moral considerations and provides, through a court of inquiry, for giving these full weight and, given an era of good trade and good will and peace in British industry, the first conditions of efficiency are present.

Management the Great Essential

Willing co-operation by adequately trained workers, though a condition, is not a guarantee of national efficiency. The ability of the industrial direction is what differentiates the progressive from the moribund enterprises in all countries, and this conviction I have found lacking in not a few British industrial quarters, while it was too late in reaching those conducting the Russian experiment with an iron hand.

Every healthy, progressive industry exhibits two connected features: First, the revenue that it provides is sufficient not only to supply all the capital required for its own development, but also to provide a margin available for the creation of new industries and the provision of new services. Without such a surplus, social progress is impossible and every proposed change in the social order which cannot guarantee it is inadmissible. In the second place, with few exceptions the average age of capital equipment should diminish rather than increase. In both these requisites many British plants are woefully lacking, while others are stripped and fit for the economic race if only the starting signal were given.

Some Leaders in British Industry

Only a few references can be made to individual plants in England that exhibit all the virtues of Amer-

ican works management translated into practice consistent with the genius of the people. Only passing notice need be taken of the highly specialized textile industries of Lancashire and Yorkshire, the employers and employees of which are past masters of their art and very progressive though long suffering from depression of trade.

At Hans Renolds & Co., Didsbury, driving chain specialists, who do such good work that their market is the world, one finds every phase of management by the scientific method carried out to perfection by a father and son who have long been acquainted with the United States by frequent visits, and who have improved on our practice in many ways. In the same neighborhood the Metropolitan-Vickers Co., making necessarily a great variety of electrical machinery in relatively small lots, preserves the best traditions of its Westinghouse origin and uses the latest methods and equipment. Rowntree & Co. of York are an amazing example of what brainy, socially-minded employers in a seasonal industry can do to stabilize employment and create a staff which is second to none in Great Britain. Cadburys of Bourneville is in the same category, and among the smaller plants the Spirella Co. of Letchworth leads in similar insight and direction. In all these cases the quality of management is most notable. But there are quite a few of the old family concerns needing pruning up above.

Perils of Shifting from War Work

We hardly realize in America the great gap left in the huge private munition building plants of England by the restrictions agreed to regarding disarmament at the Washington Conference. To turn these huge engines to light-weight industries is like taking a steam hammer to crack a nut, and their staffs are so highly specialized in precision engineering that they simply cannot cut corners in producing articles requiring no severe limits. The result is that considerable shifting of executives is called for in such English concerns if they are to continue to exist. One great firm, starved of war business, launched into so many new and wholly different enterprises that its board of directors rolled up nearly a five million dollar deficit before they were called to account and dismissed, to be replaced by successful men already versed in the new line.

Two British Investigations Into the American "Secret"

Advice galore has been poured into England. Recently Mr. Austin and Mr. Lloyd, two young engineers, brought back a report from our favored land which was received with doubtful joy by both capital and labor, though generously featured in the press. These young men asked me to discuss their report with them, and I pointed out that while they had correctly diagnosed the successful methods of the few huge, standardized-product concerns they visited in several weeks, these were typical of only half our industry—some 6000 works employing 6,000,000 people, or an average of 1000 each. The other 6,000,000 manufacturing people get a living in 300,000 plants employing an average of only 20 persons each, and using a very different technique of management from that disclosed in "The Secret of High Wages."

The same thing happened with the rapid *Daily Mail* excursion of selected trade unionists who, however, confined themselves strictly to American machine shops and foundries. The writer discussed their report with one of their number, Sam Ratcliffe of Manchester, and with J. H. Thomas, M.P., the railroad union chief. Both felt that we should continue to be on the wrong track unless starting from their basis of traditional trade unionism. Nevertheless, some English labor and capitalists are beginning to realize that in a growing country like ours a worker who expects as a matter

of course to go up the line has little time to sulk and suspect and no inclination to "ca-canny." Col. Willy, past president of the British Federation of Industries, an employers' organization, has given, I believe, the most discriminating outline of American practice and its lessons for England, and now we are to have the most significant mission of all in September—the first Government-promoted inquiry in the United States, headed by an eminent judge, five years head of the great Industrial Court, and accompanied by two labor leaders, two employers and four Ministry of Labor officials. I was impressed on my visit to the ministry with the high quality of the officials of this new branch of the civil service which grew out of war necessity.

Syndication Will Increase

Just as in the United States motor and other important industries consolidation and specialization have taken place, so inevitably will such a change come in Great Britain. But it will be slower here; first, because of the intensely individualistic temperament of the British manufacturer which is rooted in tradition; and secondly, because syndicated industry demands qualities from its leaders materially different from those now necessary in smaller British trade.

Training in the technology has been favored over that in commercial organization, and the lawyers, accountants and financial experts acting as the directors in many large British concerns today are a poor substitute for the real article. We had the same difficulty in the United States during the consolidation fever and we have still some huge amalgamations lacking wholly competent directing heads.

Outstanding Impressions

In her characteristic reticence and under-statement "The Old Lady Shows Her Medals" nowhere in this land which gave birth to the steam engine and many other basic inventions; but many Americans have exhibited them for her in admiration of her pluck. Her socially minded intellectuals of all political shades impress one by their sincere desire for more of the good life for all of the people, though some of these people

are making it difficult to reach this objective, and trade conditions everywhere are very hard for the exporter at present.

I found the Federation of British Industries presided over by Sir Max Muspratt of chemical fame, and vigorously supported by Sir Robert Hadfield and other men of distinction. At a luncheon which they gave to the American Management Mission these gentlemen revealed a keen desire to get British industry going again on an even economic keel and cut loose from Government aid. The National Institute of Industrial Psychology, a product of war necessity, is doing a work not formally organized on our side of the Atlantic and preserving a strictly scientific character. It co-operates closely with the Government committee on the study of industrial fatigue, and considerable light has been cast on "why men work" and why on occasion they will not work.

A marked feature of the collapsed mining strike in Britain was the intervention of the Protestant churches, for the first time playing unitedly a very honorable part in a great labor crisis. Their appearance while our American Management Mission was on the spot in London was roundly cussed and discussed by the contending economic and political interests, and was alternately repelled and invited by "Emperor Cook" as his meteoric career proceeded to its decline and fall. Nevertheless the united churches stoutly maintained their privilege to point out, without fear or favor, the vulnerable joints in the social armor and their right to challenge their laymen to execute economic repairs in a Christian spirit. Nowhere else in Europe or America have we found the churches so articulate and intelligent and fearless in a social crisis. It is a good omen.

Such is "the little isle set in the silver sea" as she presented herself and her woes and problems recently to a group of engineers from a land of peace and plenty who saw her plants and homes, and Government and slums, studied her wounds sympathetically and intelligently, and who feel that though down she is not out.

CAR BUILDING IN 1925

Lack of Equipment Orders Reflected in Census Return—Considerable Reduction from 1923

Manufacture and repair of railroad cars (not including railroad repair shops) showed a sharp drop in 1925 compared with 1923 totals, as reported by the Bureau of the Census. The decrease in value of production was 37.4 per cent, while the decline in wages paid and in number of wage earners was about 40 per cent. The principal figures are shown in Table I.

Establishments engaged in this work built 89,916 freight cars in 1925, a decline of 45 per cent from 1923. In passenger cars, including baggage, express and mail cars, there was a gain of 15.5 per cent. There was a decline of more than 41 per cent in production of electric railroad cars.

These returns are from 137 establishments located in 30 States, of which 30 establishments are in Illinois, 14 in Pennsylvania and 13 in Ohio. Since 1923, ten establishments had gone out of business.

Lake Ore Movement Heavy in August

Lake Superior iron ore shipments from the upper Lake ports in August were 10,709,280 gross tons, or 2,177,224 tons larger than in August, 1925—an increase of 25.52 per cent. The season's shipments to Sept. 1 amounted to 35,609,834 tons, which compares with 35,457,153 tons to Sept. 1, 1925. This is an increase of 152,681 tons, or 0.43 per cent. The shipments by ports and for the season in 1926 and 1925 are as follows in gross tons:

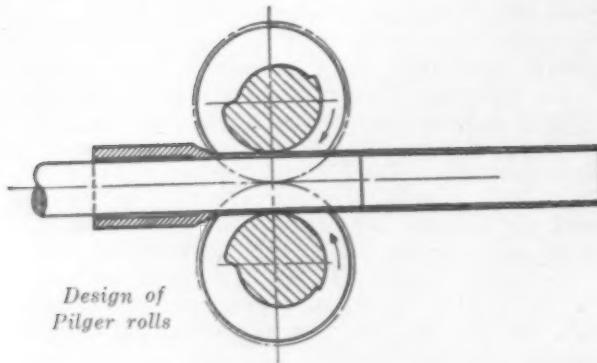
	August, 1926	August, 1925	To September 1, 1926	1925
Escanaba	1,842,416	807,394	2,788,024	2,408,724
Marquette	623,776	499,763	2,054,462	2,032,244
Ashland	1,347,519	1,229,434	4,570,573	4,355,947
Superior	3,250,086	2,350,907	9,989,858	9,992,816
Duluth	3,264,322	2,681,902	11,309,971	11,974,105
Two Harbors	1,081,141	963,318	3,896,264	3,995,307
Total	10,709,280	8,582,718	35,609,834	35,457,153
Increase	2,177,224	.....	152,681	.....

Of the season's shipments, Duluth's percentage was 31.76 per cent as contrasted with 23.77 per cent last year. Great Northern's proportion was 24.98 per cent this year against 25.11 per cent last year.

Table I.—Summary for the Industry: 1925 and 1923		
	1925	1923
Number of establishments.....	137	138
Wage earners (average number)*	49,114	80,590
Wages	\$75,924,000	\$129,178,000
Cost of materials (including fuel and shop supplies).....	\$257,393,000	\$412,660,000
Products, total value.....	\$376,507,000	\$604,250,000
Value added by manufacture.....	\$121,114,000	\$190,690,000
Horsepower used	227,774	250,102

*Not including salaried employees.

Make 50-Ft. Tubes from Ingots



INGOTS are used as raw material in a new Pilger mill at Allenport, Pa., which produces seamless tubing in lengths up to 50 ft. Recently completed by the Pittsburgh Steel Products Co., Pittsburgh, and now in full production, the plant has unusually complete equipment, particularly in the finishing operations, for which reeling and sizing machines and cross rolls have been provided. The piercing and rolling equipment consists of a Mannesmann piercing mill and two "Demag" Pilger mills, which are among the first mills of this type to be installed in this country and have a capacity of 300 tons of steel tubes per 24 hr., in sizes ranging from 6 in. to 12½ in. in outside diameter.

Ingots Pierced into Tube Blanks

One of the advanced developments in large tube manufacture which is a feature of this mill is the fact that it will successfully form tubing from an ingot, thus eliminating rolling processes between the ingot mold and the piercing mill. The ingots are cast in round molds of varying diameters and lengths to suit the requirements of the particular sizes and lengths of tubes to be made. Bottom-casting of the ingots is employed exclusively.

To cut the ingots to the necessary lengths for piercing the ingot is nicked on two sides by means of an hydraulic ram. The nicking tools are then automatically removed, and the ram, continuing forward, forces the ingot against a V-shaped block and breaks it through at the nicked places. This affords an excellent opportunity for the inspection of the steel in the ingot. Any piping or blow holes are readily detected, and that

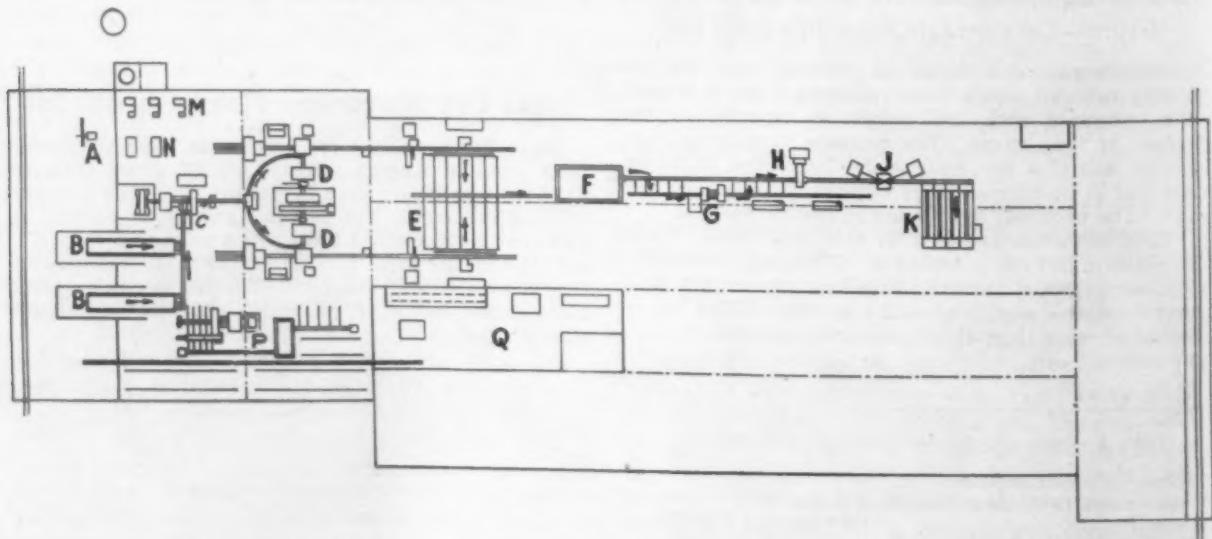
Seamless Tube Plant Embraces One Piercing Mill and Two Pilger Mills —Reheating and Polishing Feature Finishing Operations

portion of the ingot containing these defects is discarded. In this way a sound blank is assured, and the importance of this feature will be appreciated by those who understand the severe distortion the steel is subjected to in the various operations of manufacturing seamless tubing by the piercing process.

Two continuous furnaces, with bottoms inclined just sufficiently to permit the round blanks to roll toward the front end by gravity, are used for heating the blanks preparatory to piercing. Thus, as one blank is extracted at the discharge end, another rolls into its place. In this way the blanks are heated gradually and uniformly to the proper temperature, which in this case is around 1400 deg. C. (2552 Fahr.). At the extreme point of discharge, the floor declines sharply, so that the blank rolls out of the furnace on to a roll conveyor and thence to the feed trough of the piercing mill. Two furnaces are necessary to serve this mill in order to keep the piercing mill supplied with properly-heated blanks, which are taken from the furnaces alternately. The furnaces are 70 ft. long by 10 ft. wide and are fired with natural gas.

The piercing mill is of the Mannesmann, or roll type and is of heavy and rugged construction to stand up under the severe service entailed in piercing large ingots. This mill is driven by a 2250-hp. motor.

Leaving the piercing mill, the pierced ingot presents the appearance of a short, rough tube, with extremely heavy walls. It now travels without reheating to a conveyor, which places it in the trough of one of the two Pilger mills. Here it is placed on a mandrel, which consists of a large solid, or hollow, round steel bar of the same diameter as it is desired to make the inside diameter of the tube. The mandrel is carried on the forward end of a plunger working in a pneumatic cylinder, which in turn operates in a large hydraulic cylinder and might be likened to a cross-head. The hy-

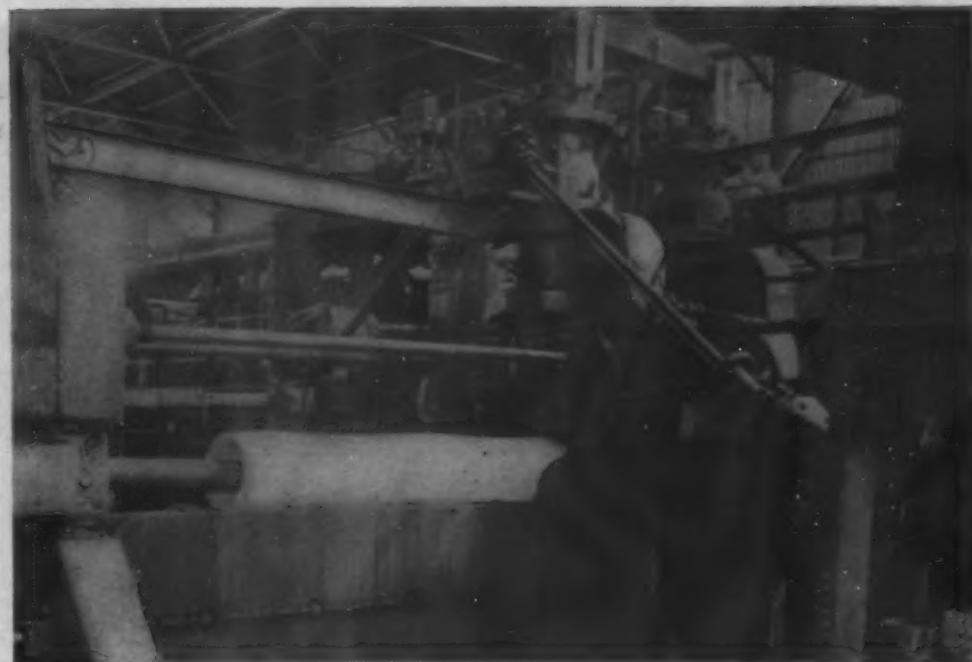


The Mill Has Been Planned So That Material Moves Continuously in One Direction. The location of different equipment is indicated as follows: A, billet breaker; B, billet heating furnaces; C, piercing mill; D, Pilger mills; E, transfer table; F, reheating furnace; G, reeling machine; H, sizing machine; J, cross rolling machine; K, cooling table; L, hydraulic pumps; M, mandrel reclaiming machines; N, air compressors; P, electric substation; Q, electric substation.



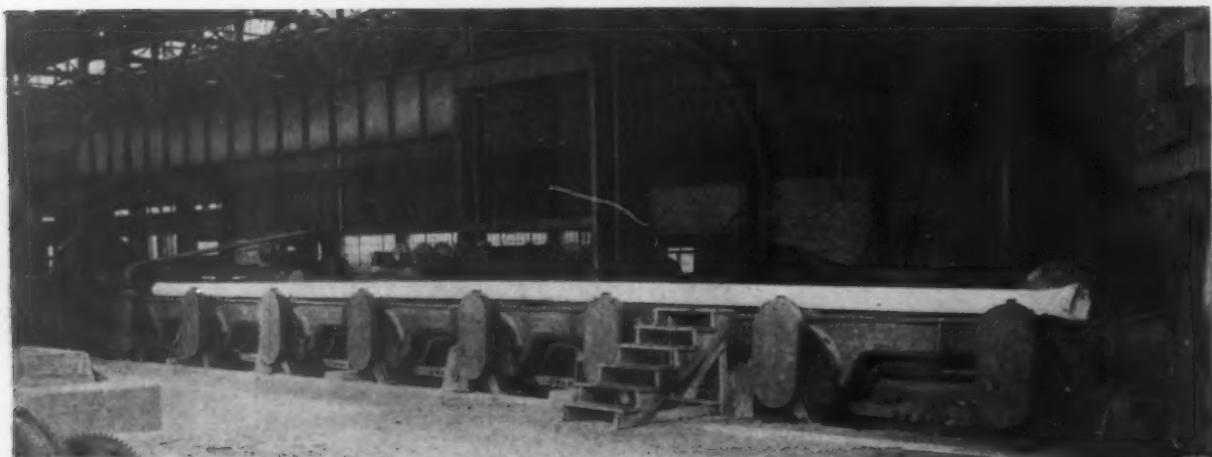
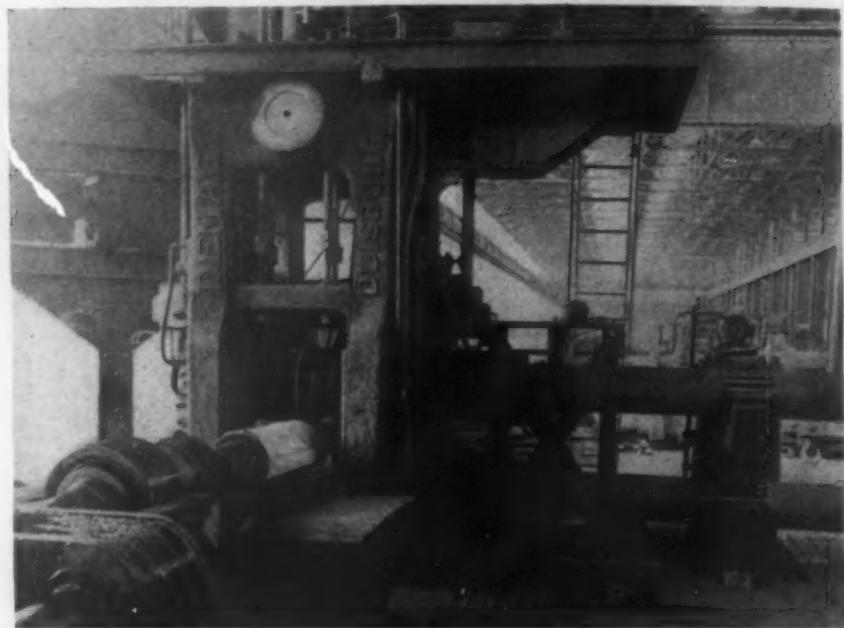
Tubing Is Made Directly From Ingots, Thereby Eliminating Rolling Processes Between the Ingot Mold and the Piercing Mill. The ingot breaker, shown in the circle, breaks the ingots into convenient lengths for piercing

From the Breaker the Ingots Are Conveyed to a Heating Furnace, Where They Are Gradually Brought to a Temperature of About 2500 Deg. Fahr. The middle illustration shows a heated ingot passing from the furnace to the piercing mill

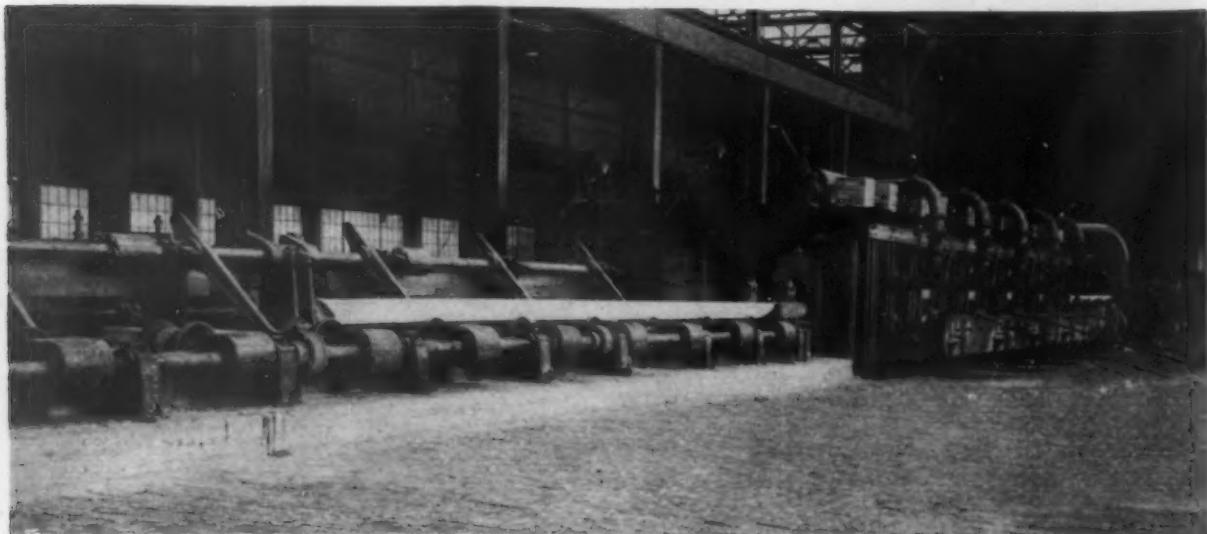


The Hollow Tube Blank, After Leaving the Mannesmann Piercing Mill, Passes Without Reheating to the Trough of One of the Two Pilger Mills

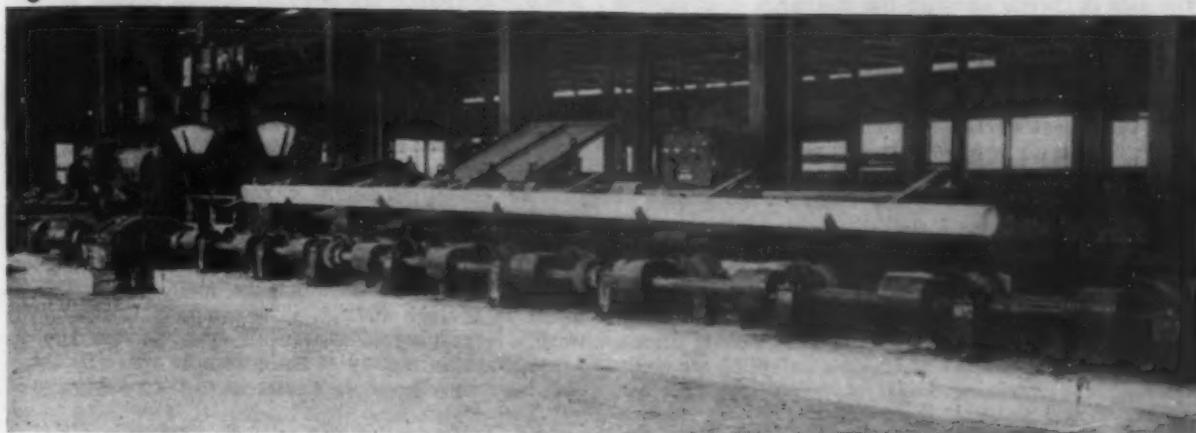
In the Pilger Mills, One of Which Is Shown at the Right, the Tube Blank Undergoes a Forging or Kneading, Rather Than a Rolling, Action. It emerges a practically finished tube so far as size and wall thickness are concerned



When the Tube Leaves the Pilger Mill, as Shown Above, It May Be Passed Into Another Furnace for Re-heating or By-Passed Around the Furnace, Depending on the Kind of Finished Surface Desired



The Reheating Furnace Is Long Enough to Accommodate a Tube 50 Ft. Long. In the illustration a tube is shown leaving the furnace



A Tube Being Transferred to the Reeling or Polishing Machine. The polishing mill consists of a pair of short, heavy rolls of special barrel shape

draulic ram thus formed moves slowly but steadily forward through the rolls.

Two Pilger Mills Take Output of One Piercing Mill

The Pilger mill, while having rolls with parallel axes mounted and operated the same as in an ordinary rolling mill, differs from the latter in that the process is that of forging or kneading rather than rolling, as the term "rolling" is usually understood. The rolls are so designed that the pass is cut away through a part of its circumference, with the result that with each rotation, the portion not cut away strikes the tube a definite and severe blow, and due to the fact that the direction of rotation of the rolls is against the tube rather than with it, as is the case in ordinary rolling, the tube is thrown back and out from between the rolls.

The forging action of the rolls driving the blank backward causes the air to compress in the pneumatic cylinder, but as the rolls rotate and again bring their cut-out sections into the pass, the compressed air forces the plunger, carrying the mandrel and tube, forward again for the next stroke of the rolls. Thus the air acts as a spring, taking up the effect of the blows, but continually forcing the tube forward for the succeeding blows. A mechanical device rotates the mandrel and tube 90 deg. between each forging blow of the rolls.

The blank thus progresses through the rolls, coming out at the opposite side of the mill a practically finished tube, insofar as size and wall thickness are concerned. A mechanical device at the rolls is then brought into play, which holds the tube stationary while the mandrel is withdrawn. The mandrel is then dropped into a tank of water to cool, and another mandrel is placed on the end of the plunger, ready for the next tube blank. This is a mechanical operation and is done from the same platform and by the same

man who operates the mill. Meanwhile the tube is conveyed beyond the rolls to a hot-saw, where the crop ends are sawed off.

It might be noted here that two Pilger mills are necessary to take care of the product of the one piercing mill on account of the longer time required to forge the tube than to pierce the ingot or roll a tube in the ordinary manner. The Pilger mills are driven by a 2000-hp. motor with mounted flywheel. Application of the principle of forging to a large seamless tube produces the fine and uniform texture of steel that is a characteristic of forged steel.

Polishing and Sizing Mills and Cross Rolls Provided

From this point the equipment of the mill is so arranged that the tube may either be passed into a furnace, reheated and passed through what is called a reeling or polishing mill, or, omitting the reheating and polishing, passed through a sizing mill and cross rolls, depending upon the kind of surface finish desired. From each of the Pilger mills a conveyor carries the tubes to an automatic manipulator, which takes them to a central conveyor leading directly into the reheating furnace. While certain classes of tubing require a high finish, there are other classes which are to be subsequently reshaped and worked, which do not require the high finish imparted by the polishing operation. The tubes in this class can be by-passed around the furnace and polishing mill and put through the sizing mill and cross rolls without reheating.

The reheating furnace referred to is long enough to accommodate a tube 50 ft. in length and is fired with natural gas. The tube enters it lengthwise at one side and then slowly passes over water-cooled rollers to the other side, during which time it is uniformly heated to the required temperature; when it reaches the oppo-



A Tube Leaving the Sizing Machine. As the tube is slightly oversize after polishing, the sizing rolls compress and elongate it to an exact outside diameter

site side it travels through the discharge door on to a conveyor which carries it to the polishing mill.

Reeling Mill Has Barrel-Shaped Rolls

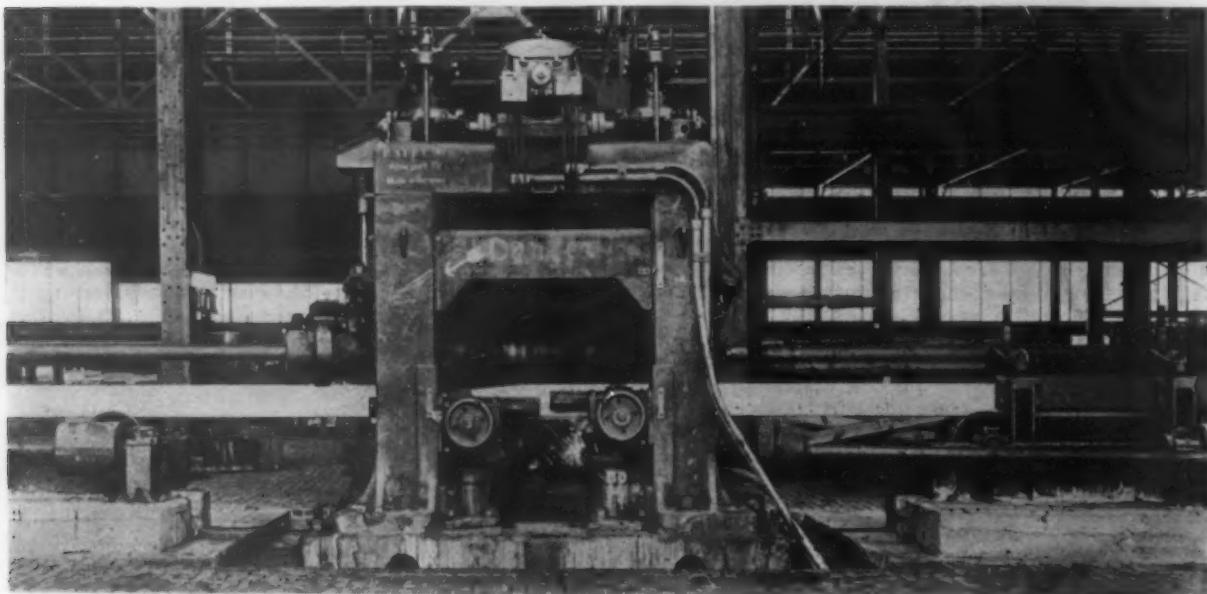
The polishing mill consists of a pair of short, heavy rolls of special barrel-shaped design, set in housings which lie side by side with their axes inclined slightly to the horizontal and in opposite directions, crossing each other at a corresponding angle in the middle of their length.

A mandrel is pushed into the space between the rolls, and the hot tube is pushed over the mandrel head. Both rolls rotate in the same direction and start the tube and mandrel rotating also. Through the frictional action of the rolls the tube is slowly drawn over the mandrel and leaves the mill practically straight and round, with a highly burnished surface

benches and other machines of special design for the finishing of the tubes.

The entire mill is driven by electrical power from the company's central power plant in Alleport, and the electrical equipment includes 152 motors, totaling 10,000 hp., three generators, two excitors, and eight traveling cranes ranging from 7½ to 20 tons capacity.

The principal product of the mill is oil country tubular goods, although a considerable tonnage of other classes of large-diameter tubing has been booked since the mill went into production. The Pittsburgh Steel Products Co. is a subsidiary of Pittsburgh Steel Co. and has plants at Monessen and Alleport, Pa., in the Pittsburgh district. The company is one of the world's largest manufacturers of seamless steel tubing. Throughout its history of more than 20 years its facilities have been devoted exclusively to the production of



The Last Operation Before the Tube Goes to the Cooling Table Is Cross-Rolling. These rolls remove any remaining waves or kinks, turning out a commercially straight tube.

and a uniform wall thickness, but slightly over size. The mandrel is a water-cooled hollow bar or tube with an integrated head.

The tube is then conveyed to the sizing mill, which consists of two horizontal rolls grooved to form a perfect round of the exact outside diameter of the tube desired. As the tube is slightly over size, as stated above, the sizing rolls compress and elongate it to an exact outside diameter. No mandrel is used in this operation.

The tube is then conveyed to and passes through a pair of cross-rolls for the purpose of removing any waves or kinks, and when it leaves these rolls it is commercially straight. The cross-rolling machine is of the orthodox type, similar to that commonly used in the pipe industry. From the cross-rolls the tube is mechanically lifted on to a long, inclined cooling table, up which it travels at a slow rate of speed by means of endless chains.

The piercing mill, Pilger mills and all primary equipment, including a specially-designed lifting magnet with movable poles for handling the cold ingots, were designed and built by Demag (Deutsche Maschinenfabrik A. G.) Duisburg, Germany.

Movement of Material Is In One Direction

After the cold tubes are inspected and sorted, they are transferred by electric cranes to various cut-off and threading machines for the finishing operations. The arrangement of this plant is such that the material is continuously moving in one direction, toward the finishing department. The latter department is equipped with modern cut-off machines of ample size to take care of any size and quantity the mill is capable of producing, together with threading machines for pipe and couplings, straightening machines, hydrostatic test

seamless steel tubes from pierced-steel billets. Its products include boiler tubes, arch tubes, superheater flues and pipes, casing, drill pipe, still tubes and mechanical tubing for automotive and other purposes.

Increased Fabricated Steel Plate Bookings

WASHINGTON, Sept. 21.—August bookings of fabricated steel plate, based on reports received by the Department of Commerce from 36 firms, were 65 per cent of capacity, as compared with 44 per cent in July and 44 per cent in August, 1925. The following table shows the tonnage of fabricated steel plate booked for each of the principal classes:

Fabricated Steel Plate Bookings (Net Tons)

	Total	Tanks	Oil age	Equip- ment	Cars	Gas Holders	Blast Furnaces	Stacks and Miscel-
January .	25,292	8,165	1,195	2,277	2,286	1,720	9,649	
February .	31,282	9,630	1,786	5,204	4,068	806	9,788	
March .	27,662	12,629	4,440	1,551	5,048	377	13,617	
April .	33,542	6,042	1,533	951	5,261	1,857	17,898	
May .	46,473	15,728	2,733	2,472	4,190	1,742	19,608	
June .	39,551	10,829	2,299	919	8,282	1,123	16,099	
July .	30,150	10,702	2,097	558	1,716	989	14,088	
August .	44,178	20,108	2,486	6,459	1,240	1,728	18,157	
Total (8 months)	285,130	93,833	18,569	19,391	32,091	10,342	113,904	

"Grinding—A Precision Method for Quantity Production," is the title of research narrative No. 118, published by the Engineering Foundation, 29 West Thirty-ninth Street, New York. The accomplishments of Charles H. Norton and others in the development of machinery and abrasives is outlined.

Steel Men Visit Swedish Plants

Interesting Experiences of Iron and Steel Institute
Delegates in a Tour of Central Sweden—
Economic Conditions Discussed

By Special Correspondent

STOCKHOLM, Sept. 4.—Following the close of the Iron and Steel Institute sessions in Stockholm on Saturday, Aug. 28, the members separated into two groups in order to visit some of the leading iron and steel works and mines in central Sweden. These visits emphasized once more the remarkable hospitality of the hosts, who went to endless trouble to insure our comfort, and who made us feel as welcome in their beautiful homes as in their works.

Leaving Stockholm on Sunday night in the luxurious sleeping cars, which the Swedish State Railways generously placed at our disposal for several days, we arrived early the next morning at Degerfors where Mr. and Mrs. E. Odelberg extended to us a typically Swedish welcome at breakfast before our visit to the Strömnas steel works. One of the foundations of this company's steel operations is the world-famed ores from the ancient mining fields of Persberg. The company also produces electric pig iron in furnaces erected at Trollhättan.

On to Bofors, we were met by S. Vingquist, chairman of the Bofors company and by leading engineers, who conducted us over the furnaces and extensive engineering shops where an opportunity was afforded to examine the method of manufacturing guns from cast steel, capable of fulfilling the requirements as to strength for the highest ballistic effect. From Bofors, we passed on to Hellefors, where is to be found one of the best equipped and best organized works in Sweden for making high-grade steel. At the end of a strenuous day the party was entertained at dinner by the managing director of the Hellefors Bruks A. B., Th. Wigelius. Dinner was served in a room illuminated by wax candles in quaint wooden sockets, and those serving were attired in the picturesque Swedish costume of olden days.

Electric Blast Furnaces

Tuesday, Aug. 31, was devoted to a visit to the works of the Uddeholm Co. At the Hagfors works of this company are electric blast furnaces which have been running since 1912, and steel is being made direct from the ore. A Heroult three-electrode furnace is fed with briquets made from iron ore and powdered charcoal. It has run continuously for three weeks at a time and can produce a 6-ton charge of soft steel, containing from 0.10 to 0.15 per cent carbon, in 8 hr. The consumption of charcoal is only 40 per cent compared with ordinary blast furnaces, consequently, the content of phosphorus in the pig iron is lower than usual.

A. Herlenius, the managing director of the Uddeholm Co., expressed the opinion that electric power would find an ever-growing use both for further smelting, heating and annealing, as well as for other purposes in the steel industry.

The Fagersta Steel Works were visited on Wednesday, Sept. 1, and the guests were shown over these interesting mills by A. M. Fornander, the managing director of the company, Mr. Ericson, a director and others. Accompanying the party was Envoyé Lagercrantz, former Swedish minister in Washington, who is now one of the directors of the Fagersta company. The output of the Fagersta works is about 60,000 tons of ingots per year.

Where Brinell Was Once Active

J. A. Brinell was chief engineer at Fagersta between the years 1892 and 1907, and in the company's

museum are many interesting Brinell exhibits, including his first testing machine and many test pieces. A successor of Brinell at Fagersta was Axel Wahlberg, who, during the past fourteen years has been chief engineer of Jernkontoret. Mr. Wahlberg was in charge of the party visiting the above-named works, and to him credit is due for much of the pleasure and interest of the tour.

Sir Peter Rylands, president of the Iron and Steel Institute, in several short but eloquent and appropriate addresses, expressed what was in the mind of many when he referred to the fine quality of Swedish steel products and to the meticulous care with which work was carried on.

Large-scale methods of production are practically unknown in Sweden, where quality is the dominating element aimed at in production. Mr. Herlenius, who spoke on one occasion of the importance of scientific investigation to practical steel making, pointed out that quality could not be obtained under present-day conditions without the application of scientific research and it is evident that scientific methods of production are now more generally applied in the Swedish industry.

Poor Economic Conditions

Economic conditions are, however, weighing heavily upon the Swedish steel industry and are forcing greater attention to methods of cooperation. This aspect of the question was dealt with by Mr. Wigelius in some observations which he made at Hellefors, in part as follows:

The Swedish industry is fighting against the same difficulties as the European iron and steel industry, and our fight is at least as hard as yours. Not only have we, like you, lost many of our old export markets, but we realize that the tremendous metallurgical progress made during the war has greatly handicapped many of us. International competition has since then become more severe—we may well say more disastrous—than we could ever dream of.

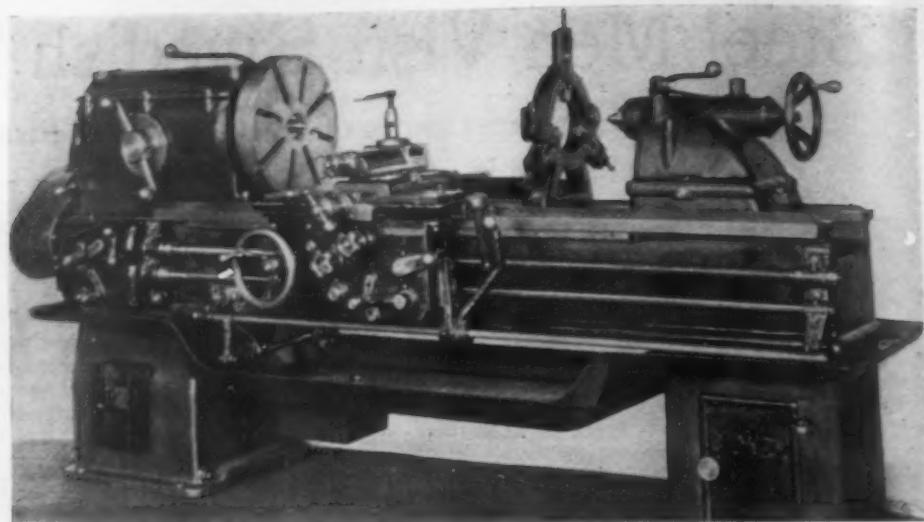
The time calls for cooperation—international cooperation; and I believe we shall be forced to try to find some way of working together in distributing our products just as hitherto we have joined forces in making metallurgical or pure scientific progress. The latter is all very well, but it does not benefit us unless the selling end of our work is attended to, and carried out in rational way. Farthings that we may gain by saving something now and then in our mills are lost in pounds sterling if we do not succeed in joining forces in our sales organizations when distributing our products. We must always realize the necessity of technical advancement—but let us not for a moment forget that the marketing of our products is at least just as important.

The same point was referred to by Mr. Fornander at Fagersta, who appealed for more intimate collaboration and cooperation.

Swedish Motor Cars

A further attempt is being made to manufacture motor cars in Sweden and the present project has behind it the support of the S. K. F. ball bearing company and the other firms. So far ten trial cars of medium power have been produced for experimental purposes. The organization is not yet completed. It is considered that, if the existence of a market for Swedish motor cars can be shown, adequate capital will be forthcoming to establish the industry on a firm basis.

Eight Mechanical Speed Changes Are Secured By One Lever On Front of the Headstock



Engine Lathe with Single Lever Speed Change Control

A heavy-duty geared-head eight-speed engine lathe with simplified single-lever control for speed changes has been brought out in 18 and 20-in. sizes by the Sidney Machine Tool Co., Sidney, Ohio. A feature of the machine is that the eight mechanical changes of the spindle speed are secured by only one lever located at front of the headstock.

The speed changes are made entirely through clutches. There are at least four gears in mesh in the headstock at all times. This, it is stated, insures free cutting and the elimination of tooth marks on the finished work. The lever controlling the speeds of the headstock may be operated in either direction. The spindle speeds range from 12 to 317 r.p.m. A shift can be made either from a low to a higher speed or by operating the lever in the opposite direction from the higher speeds to the lower. A dial plate on which the eight speeds are marked is attached to the single con-

trol lever at the front of the headstocks, and the speed desired can be secured instantly by turning the lever to the speed indicated on the plate. Speed changes are made with the lathe running.

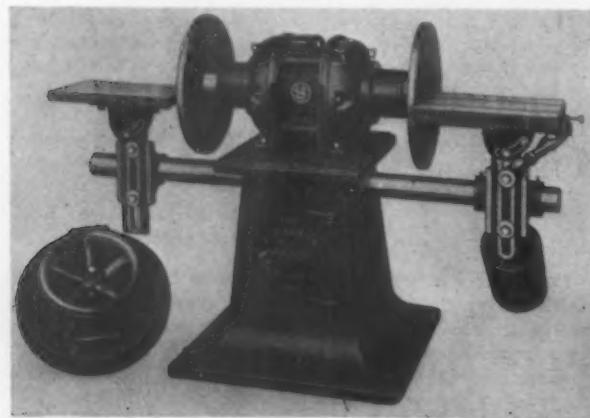
The gears used in the headstock are of the stub-tooth type, heat treated, hardened and ground. The drive shaft and back gear shaft and all thrust bearings in the headstock are equipped with S. K. F. deep-groove precision-type ball bearings. The tailstock and bed are of a new design with a view to making the lathe well proportioned for rapid production work. The apron control lever is connected with the control lever on the top of the headstock which operates the driving clutch, which is of a multiple-disk type. In addition to the splash system of lubrication, the machine is equipped with a force-feed system, the pump for which is driven from the drive shaft of the headstock. This has a capacity of pumping 10½ gal. per hr. An oil strainer and purifier is fitted in the headstock. The lathe illustrated is 18 in. x 6 ft. in size. Sizes both smaller and larger than the 18 and 20-in. machines will be added to the line.

Single and Double Disk Grinders

Single and double disk grinders of heavy construction to withstand continuous production service have been placed on the market by the United States Electrical Tool Co., Cincinnati. The double disk machine is shown in the accompanying illustration.

The machines are regularly available in six sizes, with motors ranging from 1 to 10 hp. and with disks from 10 to 20 in. in diameter. The table of the smallest machine measures 6 x 10 in., and the table of the largest size 10 x 16 in. A wheel press is furnished as part of the standard equipment.

The spindle is of nickel steel, of one piece and is mounted in ball bearings, which are inclosed in dust-proof boxes. The machines are equipped with remote control to assure motor protection under all conditions. The control is located in the base of the grinder and has an overload cut-out and no-voltage release. The push-button station is located on the motor frame as shown. Direct-current disk grinders are furnished with manually-operated starters and fused switch. Remote control on d. c. machines is available as an extra.



The Machines Are Available As Shown Above, or with Single-Disk Grinding Member Located on Either Right or Left-Hand Side

Establishments engaged primarily in the manufacture of foundry supplies reported a total output valued at \$12,723,120 in 1925, according to the biennial census of manufacturers issued by the Bureau of Census. The total value of products shows an increase of 24.2 per cent as compared with \$10,247,864 in 1923, the last preceding census year. Of the 66 establishments reported for last year, 20 were located in Pennsylvania, 19 in Ohio, nine in Illinois, six in New York, three each in Alabama and Michigan, two in Connecticut and four in other states.

To haul 1000 tons of freight and equipment, including locomotive and tender, a distance of one mile, an average of 142 lb. of fuel was required in the first six months in 1926. The average was 144 lb. in the first half of 1925 and 170 lb. in 1923. Factors contributing to the increased efficiency include improved locomotives, educational programs to instruct firemen, close inspection of coal purchases, and increase in the length of "runs."

SINGLE-SPINDLE GRIDLEY

Drive of Automatic Turret Lathe Simplified by Incorporation of Geared Head

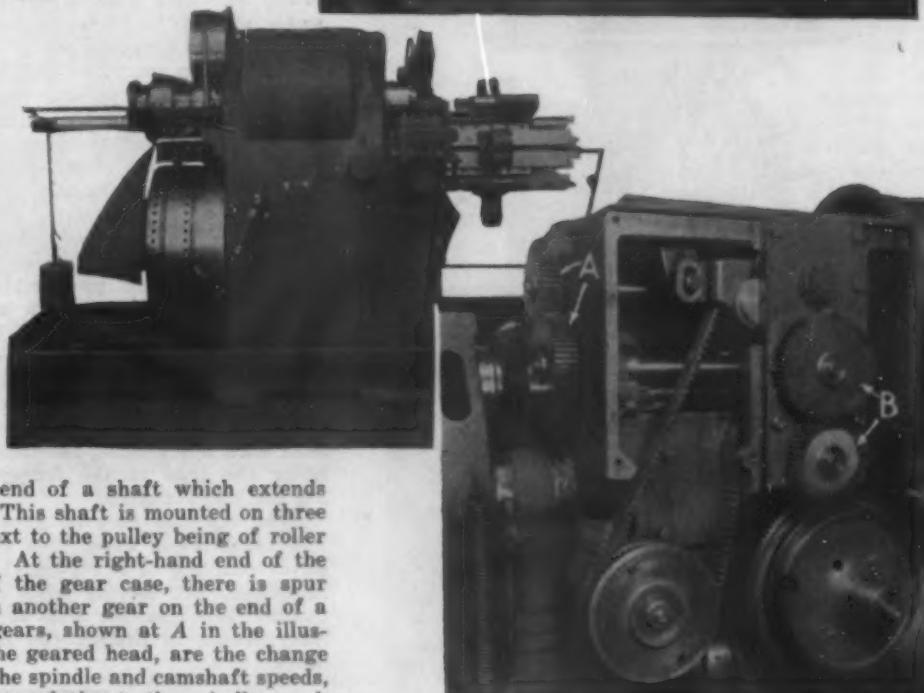
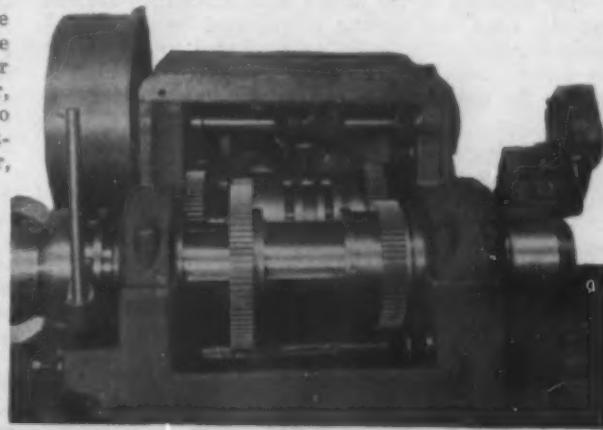
Increased power, making possible the use of speeds and feeds which permit of advantageous use of tools of the latest materials and of latest tooling methods, is stressed in connection with improved Gridley single-spindle automatic turret lathe here shown, which has been announced by the National Acme Co., Cleveland. The improvements also simplify installation and reduce maintenance. The machine is designated as the model L and is built in the 4½-in. size.

The operating principles of the machine are the same as in the previous design, but the drive of the new machine has been simplified. It is driven either by one broad belt or by a single constant-speed motor, instead of by two narrow main driving belts and two auxiliary belts with a special countershaft, or by direct-current variable-speed motor and an auxiliary motor, as previously. This simplification is accomplished by the incorporation of a geared head having one set of change-gears which will change both the spindle speed and the feed at the same time, and a second set of gears through which the rate of feed may be changed independently of the spindle drive.

Power for driving the turret and camshaft and the spindle is transmitted from the large pulley at the left-hand side of the head to the geared head. The

operating spool to the left, the left-hand clutch becomes engaged and the spindle revolves at slow speed. When the spool is thrown to the right, the spindle rotates at high speed. By properly locating the dogs on the cam drum the spindle speed may be controlled to suit the various operations. The spindle drive of the previous machines was through two loose and one tight pulley. In the new design the two narrow belts are eliminated, thus in turn eliminating the power limitation, belt slippage and breakdowns of the previously used shifting belts.

The advantage of the geared head is said to be equally marked when the machine is motor driven. Instead of two motors requiring direct current and a



Front View of the Improved Gridley Single-Spindle Automatic Turret Lathe at Center. The geared head with spindle cover removed is shown at the upper right, and a rear view of the geared head with covers removed. at the lower right

pulley is on the outer end of a shaft which extends through the gear case. This shaft is mounted on three bearings, the bearing next to the pulley being of roller type to offset belt pull. At the right-hand end of the pulley shaft, outside of the gear case, there is spur gear which meshes with another gear on the end of a parallel shaft. These gears, shown at A in the illustration of the rear of the geared head, are the change gears that control both the spindle and camshaft speeds, keeping the feed in proper relation to the spindle speed. Change gears B govern the speed of the camshaft and independently control the feed. Power is transmitted to the mechanism of the power-feed bracket through a pinion on the inner end of the shaft on which the lower of these change gears is mounted.

The mechanism by which (by a combination of a direct drive and a planetary drive) permits the cam-shaft to operate at high speed during the indexing and the idle tool movements, has been retained in the new machine, the power-feed bracket being the same as in the previous motor-driven model.

The spindle drive is through two small and large gears on the spindle drive shaft, these gears meshing with two mating gears mounted on the spindle. The gears on the spindle drive shaft are mounted on large friction clutches, between which there is an operating spool. The clutch spool is operated by a swinging fork, which is operated by a cam drum directly below it. When the spool is midway between the clutch bodies, the clutches are disengaged and the spindle is stationary. When the cam drum causes the fork to throw the

complicated system of control as in the previous motor-driven single-spindle machine, one constant-speed motor equipped with push-button control, is employed. The motor of the new machine is mounted on top of the geared head and is connected by silent chain to a sprocket which takes the place of the drive pulley.

Other improvements include the spindle, which has been redesigned for strength and accuracy. The spindle nose is located by a ground pilot and back plate, when screwed into place. The pilot and back plate are intended to assure concentric rotation of the collets. The spindle bearings are of high-speed bronze and are provided with oil grooves. Forced-feed lubrication is provided for the machine.

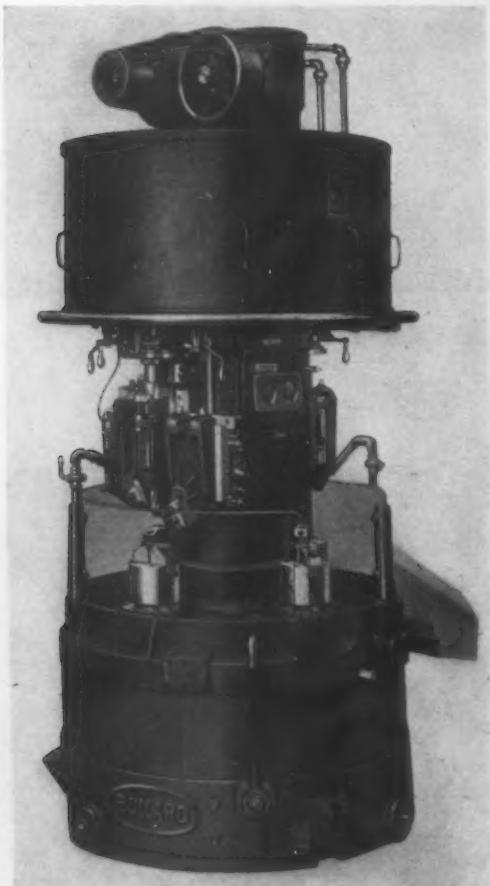
Bituminous coal mined during the week ended Sept. 4 is estimated by the National Coal Association at 11,125,000 net tons. This is the second consecutive week to pass 11,000,000 tons, as the preceding week showed 11,215,000 tons.

SMALL MULT-AU-MATIC

Power Chucking Device a Feature—Machine Contained Within 48-in. Diameter Floor Space

A 6-in. four-spindle model of its Mult-Au-Matic has been brought out by the Bullard Machine Tool Co., Bridgeport, Conn.

In general design the new automatic is similar to the company's previous machines of the same name, but stands only 104 in. high, overall and is contained within a floor space 48 in. in diameter. Its field of application comprises the smaller pieces for which the greater capacity of the larger Mult-Au-Matics are not needed. Less tool setting is required on this three machining-station machine, as compared to the larger five-station unit, and therefore the small machine is suitable for quick set-up and more frequent change of



The Power Chucking Device Is at the Loading Station and Connects with Each Spindle in Turn

tooling, which permits it to be used economically also on short runs of work.

The base of the machine is a circular casting which contains oil and coolant reservoirs and pumps. Rising from the base is a central column, the lower portion of which provides a tapered cylindrical bearing for the carrier. The upper portion is square in section, on three faces of which are mounted the tool heads and ways, the fourth face being equipped with a door for accessibility to mechanism within.

The compartment immediately above the base contains the carrier indexing arm, spindle drive gears and the chuck operating mechanism; and is covered by the work spindle carrier itself. The carrier supports four spindles equally spaced about the central column, which, with the tool heads mounted on the column faces above, provide one loading station and three machining stations. Mounted at the head of the central column and overhanging the tool heads and spindles is the feed works for each of the three machining stations, and,

also, the multiple disk clutch and upper portion of the central controlling mechanism. The cover of the feed works compartment comprises a distributing reservoir for lubricating oil, and it also provides a platform for the drive bracket and upper oil reservoir unit, as well as a suitable mounting for the motor.

An outstanding feature is the power chucking device, which is located at the loading station and connects with each spindle in turn as it is presented for unloading and loading the work. By a throw of the operating lever in either direction, the work is released or gripped, and the arrangement is such that the force exerted on the lever does not affect the chucking pressure. The device is designed for use in connection with standard or special chucks and is adaptable to operating several designs of special work-holding fixtures. Power for operating the device is derived from the machine drive. The holding force, once the jaws are set, does not depend upon constant connection with the source of power. The amount of jaw pressure may be set to suit the work to be machined.

The various types of tool heads applied at the three machining stations may consist of plain vertical head, compound horizontal head, standard universal head, giving vertical, horizontal or angular tool feed or of special double-purpose heads which provide vertical with either horizontal or angular feed, both at the same station. Any combination of these heads may be used at the three stations on the machine.

The capacity of the new Mult-Au-Matic is indicated by a diameter of spindle top and chuck of 6½ in. The top of the chuck is 35 in. above the floor line. The full swing of work is 10 in. in diameter up to 5 in. high, and 6½ in. diameter swing for higher work up to 7½ in. maximum. The tool heads are capable of 5½ in. vertical travel or components of this distance in vertical and horizontal or angular travel up to a maximum of 2 in. for cross or bevel facing.

Adjustments of spindle speeds and tool feeds are made by change gears on the individual feed brackets in the upper compartment, providing independent adjustment at each station. Spindle speeds may range from 30 to 480 r.p.m.; while tool feeds may be set at rates from 0.003 in. up to 0.114 in. per revolution.

The operation of the new machine is similar to the other sizes of the company's Mult-Au-Matics. Rough pieces chucked at the loading station are presented in sequence at stations No. 2, No. 3 and No. 4 for the various machining operations. Four pieces are in process at one time and a finished piece is produced with each index cycle, the time of the completed piece being the time of the longest single operation plus 2½ sec. for indexing.

The machine may be arranged for either belt or individual motor drive, and if desired a bracket for direct coupling of a 7½-hp., 1800-r.p.m. motor can be furnished. All moving parts of the machine are adequately safe-guarded and safety devices have been incorporated to protect the mechanism against accidents.

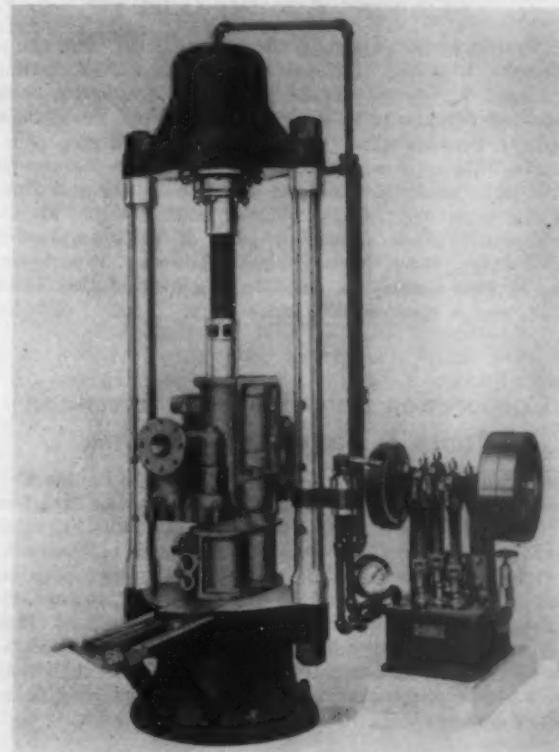
The Patent Office has installed four miles of steel shelves for the filing of copies of patents. In part it is replacement of the 20 miles of wooden shelves on which the copies were formerly filed, according to Commissioner of Patents Thomas E. Robertson. The work of installing steel shelves in place of wooden shelves will be 40 per cent completed in 10 years it is estimated, at the present rate of appropriations. Steel shelves are being installed as a means of greater security of the invaluable copies and also as a matter of convenience and economy. Commissioner Robertson said that the Patent Office has granted 1,600,000 patents and that monthly sales average 500,000 copies.

Mechanical stokers to the number of 104 with 38,852-hp. rating were sold during August of the present year, according to reports received by the Department of Commerce from 12 establishments. Sales during July included 125 stokers of 50,494-hp.

Hydraulic Straightening and Forcing Press with New Features

Compactness, ease of operation and low maintenance cost are general features claimed for the hydraulic press here illustrated, which is being placed on the market by the National Brake & Electric Co., Milwaukee.

The machine is intended for use in foundries and machine shops for straightening malleable castings, steel forgings and other pieces, as well as for pressing



Features Include Four-Way Operating Valve, Adjustable Safety Valve for Pump and Adjustable Distance Safety Valve in Ram Head

gears, sprockets, etc., on and off their shafts. It is for use also on the pressing in of bushings. The press is of 150-ton capacity, and is available in various working heights up to 52 in., between the face of the platen and the ram.

The press is actuated by means of a vertical triplex pump in which ordinary machine oil is used, which permits the press to be operated in the cold weather without the danger of freezing. The pump is designed to deliver 4000-lb. pressure, which in turn develops 150-tons pressure on the ram.

New features, patents for which have been applied for, include the four-way operating valve, adjustable safety valve for the pump and the adjustable distance safety valve located in the ram head of the press, which automatically controls the stroke of the ram. These features are said to have also made possible the elimination of the use of separate "pull-back" cylinders and mechanical devices for the "pull-back" of the ram, the down stroke, stop and "pull-back" being controlled by the single lever of the operating valve. This valve lever has three operating positions within a 90-deg. arc—extreme right for the down stroke, left for the up stroke, and the central or neutral position which stops the ram at any point in the up or down stroke. Smooth and easy operation of this valve at all pressures is stressed as permitting of accurate control of the ram and as facilitating instantaneous starting or stopping of its travel in either direction.

The drive may be by belt with tight and loose pulleys or by electric motor, a 5-hp., 1750-r.p.m. motor mounted on the pump frame and direct connected to the pump. A transfer-table attachment for use where the material is too heavy for manual handling can also

be furnished. With this attachment the material is deposited by crane on the transfer table, from which it is moved onto the platen of the press by means of a hand crank and triple lead screw. The diameter of the platen is 28 in. and the distance between columns is 36 in. The floor space required for the pump and press is 6 ft. x 6 ft. The weight of the press is approximately 3800 lb. and the weight of the pump 900 lb.

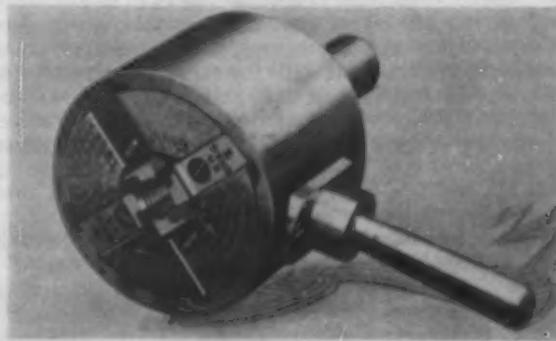
Revises Line of Self-Opening Die Heads

The National Acme Co., Cleveland, has revised its line of self-opening die heads and is now offering two new types, one of stationary type and the other of revolving type. The two together are designed to handle every threading need within their capacity. The stationary or hand die has been developed to replace all the various types of stationary or hand dies heretofore made by this company. This tool can be used for straight-away threading, close-to-the-shoulder threading, or for making short threads and can be applied to various types of hand screw machines, turret lathes and other tools requiring a stationary die.

A further step taken in the simplification of the tools is in the making of chasers interchangeable between the revolving and hand dies of the same size, thus making it necessary to stock only one type of chaser. The stationary die head is offered in seven sizes corresponding to the sizes of the revolving type. The cutting range is from $\frac{1}{8}$ to $2\frac{1}{2}$ in.

The revolving die, style R, which was previously described in THE IRON AGE, is for use in all cases where the live spindle requires a revolving die head. An outstanding feature of the new stationary type die head, which is designated as style S Namco, is that it can be taken apart for cleaning and reassembled quickly. It is stated that this has been done in less than 2 min. The tool is disassembled by removing two screws that hold the handle in place, allowing the body and shank to slip out of the cup or hood. The tool can then be cleaned and quickly reassembled without affecting the size adjustment.

Another feature of the stationary die head is that the shank rides on coiled springs placed so that when the thread has been cut to the desired length and the chasers are automatically thrown open, these springs pull the chasers away from the work, making possible close-to-the-shoulder threading or the accurate cutting



The Chasers of the Stationary and Revolving Types Are Interchangeable. Rapid Assembly and Disassembly Is a Feature

of short threads. Size adjustments can be quickly made with a screw driver without removing the die from the holder, the adjusting screws being located in the periphery of the cup and the adjusting ring being graduated for ready reference.

The Ordnance Department, United States Army, will shortly offer for sale 8,000,000 lb. of unserviceable smokeless powder, now in storage at the Picatinny Arsenal, Dover, N. J. The powder may be used in the manufacture of nitrocellulose lacquers and various Pyroxyl products.

To Discuss New Uses of Bituminous Coal

The Carnegie Institute of Technology announces a Conference on Bituminous Coal to be held at Pittsburgh, Nov. 15 to 19, the purpose of which is to consider new uses for bituminous coal and to present the results of recent investigations of coal that are concerned with improved methods of utilization and combustion.

A number of distinguished European scientists will take part, as well as some of the best-known American fuel technologists and engineers. The program will include the discussion of the manufacture of substitutes for gasoline from coal, complete gasification of coal, high and low temperature distillation, coal-tar products, power, smokeless fuel, fertilizers, etc.

Among those who have accepted invitations to be present and to speak are: Dr. Friedrich Bergius, Heidelberg, Germany, inventor of the Bergin method of the production of oil from coal; Prof. Franz Fischer, director Institute of Coal Research, Mulheim-Ruhr, Germany; Dr. C. H. Lander, director of fuel research Department of Scientific and Industrial Research, London; Dr. R. Lessing, consultant in fuel technology, London; Geoffrey M. Gill, consulting engineer and gas specialist, London; Harold Nielsen, inventor of the L. and N. Process, London; Gen. Georges Patart of France, inventor of a process for making methyl alcohol from coal; Marius R. Campbell, United States Geological Survey; A. C. Fieldner, United States Bureau of Mines; John M. Weiss, chemical engineer, New York; C. J. Ramsburg, vice-president, Koppers Co., Pittsburgh; S. W. Parr, professor of applied chemistry, University of Illinois; C. V. McIntire, Consolidated Coal Products Co., Fairmont, W. Va.

Papers also will be presented by a number of other American and European technologists. Special attention will be devoted to the discussion of recently developed processes which are in actual operation.

On an advisory board are: Hon. Andrew W. Mellon, John Hays Hammond, Otto H. Kahn, Charles M. Schwab, Samuel Insull, E. M. Herr, and Dr. Frank B. Jewett.

More detailed announcements will be issued later and invitations to the conference will be sent to individuals who are interested and to scientific and industrial organizations, which will be asked to appoint representatives. Correspondence and inquiries should be addressed to Prof. Sumner B. Ely, secretary Conference on Bituminous Coal, Carnegie Institute of Technology, Pittsburgh.

Employment in Metal-Working Plants Shows Another Gain

Employment gained in August in over 800 shops affiliated with the National Metal Trades Association, Chicago. A grand total of 636,031 employees was reported for plants in New England, New York, New Jersey, Pennsylvania, Ohio, Indiana, Michigan, Wisconsin, Illinois, Iowa and Missouri. This is the second gain in as many months, the totals for July and June having been 628,198 and 611,843 respectively. Michigan plants alone showed a gain of 6732 employees since July. New England shops, however, reported a loss of 1008 employees since July, a loss of 2188 since June, and a loss of 3645 since May.

Corporation Subsidiaries Intervene in Jones & Laughlin Rate Case

WASHINGTON, Sept. 21.—The American Bridge Co., American Sheet & Tin Plate Co., American Steel & Wire Co., Illinois Steel Co. and National Tube Co. have been permitted by the Interstate Commerce Commission to intervene in connection with a recent petition filed by the Jones & Laughlin Steel Corporation protesting against the Jones & Laughlin mileage scale of rates for iron and steel products established by the commission. The Jones & Laughlin Corporation has asked that the scale be eliminated and lower rates applying from stalled and the coke is going for domestic uses.

Active Expansion of Coke Plants

BARRING only the war period, construction of by-product coke ovens is greater now than at any other time in the history of the industry. No fewer than 17 installations are in progress, embracing 1167 ovens with a rated annual capacity for carbonizing 10,469,142 tons of coal from which it is estimated there will be a yield of 7,331,085 tons of coke exclusive of breeze. Ovens, the primary purpose of which is to supply gas to steel works or coke to blast furnaces, now being built number 964, and will produce 6,272,260 net tons of metallurgical coke, while 203 ovens are under construction for commercial or gas plants which will yield 1,058,825 tons of coke.

The major part of the new construction represents gain in the country's capacity. The 43 new ovens at the Youngstown plant of the Republic Iron & Steel Co. replace a larger number of older ovens of smaller size, but the total capacity of the plant with the completion of the new ovens will be somewhat increased by the change. Similarly, 30 new ovens of the Indiana Coke & Gas Co. replace 30 old ovens.

The United Gas Improvement Co., Philadelphia, is reported to have plans pretty well along for a new plant in Philadelphia and the Semet-Solvay Co., which had under consideration an addition to its Detroit plant is understood to have abandoned that extension in favor of a new plant in Toledo. Information as to the size of these plants is not available. The Semet-Solvay Co. plant at Benwood (WHEELING) W. Va., which formerly served the blast furnaces and steel works of the Riverside Works, National Tube Co., now is a commercial plant. Crushers and screens have been installed and the coke is going for domestic uses.

Coke Installations for Iron and Steel Companies

	No. and Type	Coal, Tons	Coke, Tons
Bethlehem Steel Co., Lackawanna, N. Y.	57 Koppers-Becker	520,125	364,000
Bethlehem Steel Co., Johnstown, Pa.	77 Koppers-Becker	570,000	339,000
Carnegie Steel Co., Clairton, Pa.	348 Koppers-Becker	3,900,000	2,730,000
Central Furnace Co., Massillon, Ohio	49 Koppers-Becker	438,000	307,000
Ford Motor Co., Detroit, Mich.	120 Wilputte	876,000	612,200
New England Fuel & Trans. Co., Everett, Mass.	51 Wilputte	372,000	260,610
Republic Iron & Steel Co., Youngstown, Ohio	43 Koppers-Becker	400,500	280,350
Semet-Solvay Co., Buffalo, N. Y.	66 Semet-Solvay	438,000	307,000
Tennessee Coal, Iron & Railroad Co., Fairfield, Ala.	63 Koppers	657,000	460,000
Weirton Steel Co., Weirton, W. Va.	49 Koppers-Becker	438,000	307,000
Wheeling Steel Corporation, East Steubenville, W. Va.	51 Koppers-Becker	347,000	242,000
Total		964	6,272,260
		8,956,625	5,673,260

Commercial or Gas Plant Installations

Consolidated Gas Co., New York	74 Koppers-Becker	638,750	447,125
Diamond Alkali Co., Painesville, Ohio	23 Koppers-Becker	230,000	161,000
Indiana Coke & Gas Co., Terre Haute, Ind.	30 Koppers	200,000	140,000
Citizens Gas Co., Indianapolis, Ind.	40 Wilputte	292,000	204,400
Utica Gas & Electric Co., Utica, N. Y.	21 Koppers-Becker	104,244	72,000
West Boston Gas Co., Framingham, Mass.	15 Koppers-Becker	47,523	33,300
Total		203	1,512,517
Grand total		1,167	1,058,825
			10,469,142
			7,331,085

Ohio Foundrymen Discuss Problems

Melting Practices, Research Work and the Need for Greater Publicity for Gray Iron Castings If Industry Is to Be Maintained are Convention Topics

DISCUSSION of the many problems confronting the foundry industry today and the formulation of plans for broadening the scope of the organization's activities were the features of the sixth annual convention of the Ohio State Foundrymen's Association at the Hotel Sinton, Cincinnati, Sept. 16 and 17. Cupola melting, reduction of losses in brass foundries, the manufacture of pig iron, the part that research plays in industry and foundry costs were among the subjects considered. A registration of about 200 foundry executives not only set a high mark in the association's history, but also testified to the interest shown in bettering operating practices within the industry.

Declaring that the reluctance of the consumer of cast iron to pay a price which will permit extended research and betterment of quality is an unsound policy, and that this metal is the best to be obtained, E. J. Lowry, Hickman, Williams & Co., Chicago, in a paper on "Rational Cupola Melting," advocated the adoption of a more intelligent method of cupola melting. He said that the designer of a casting often asks for a product which the founder makes against his better judgment. The result is failure and the shift of another consumer from gray iron to malleable or steel castings. A few changes in the design probably would have corrected the defect. The conclusion to be drawn is that all of the blame for poor gray iron castings does not rest upon the foundryman. What is needed is an educational drive on the subject of cast iron for the engineers of the country.

More Research Activity Recommended

Mr. Lowry charged that foundrymen have been lax in accepting new ideas and suggested that the industry must have more research activities. "The crying need of the foundry today," he said, "is for simplification and uniformity combined with strong iron. When founders forget the past and delve into the mysteries of their own work to solve their problems, cast iron will result."

The consumer is acquainted with the properties of cast iron, according to Mr. Lowry, and refuses to acknowledge that if he pays more he will secure better quality. Instead, he believes that if he pays double for some other metal he is better off. His adherence to this policy causes economies to float in the wrong direction. Stronger and more uniform cast iron can be had for a higher price and will save money for the consumer. This metal can be secured, he said, by more rational cupola melting.

There has been little improvement in cupola design, said Mr. Lowry. Introduction of the Schuermann patent and other changes have been looked at askance because the foundry world is skeptical of their effects. The foundryman knows that periodically he gets a continuous run in which the iron has too little life or in which pin holes and dirty surfaces occur. Experience shows that he runs into this trouble and out of it without really learning the cause. When he compares notes with his co-workers he concludes that every cupola is a thing unto itself and a recurrence of the trouble is normally expected.

Factors Influencing Melting Conditions

Variation in cupola melting perhaps is due largely to variation in combustion in the cupola. It is impossible to lay down any set of rules which will meet the conditions of the cupolas in this country, said Mr. Lowry, because of the changes in material used in one

as compared with that in another. For example, a foundry making heavy machinery castings and a stove plate foundry working on light castings may have the same sized cupolas, but the size and weight of the scrap entering the charges differ, the former using heavy machinery scrap weighing more than 150 lb. and the latter stove scrap weighing a maximum of 50 lb. The light open scrap melts readily and does not impede the flow of gases, whereas the heavy, blocky pieces choke the cupola and prevent proper combustion with a bad effect upon the melt as the result. The use of light scrap charges followed by heavy charges in the same cupola also creates a difficult situation. Variation in the size of pigs influences melting conditions and can cause considerable loss.

Mr. Lowry pointed out that uniformity of cupola design would not eliminate trouble, because of the variation of material going into the cupola. He cited the difference in the grades of coke and pig iron. In the case of the latter the difference reverts to the ore and the blast furnace practice as well as to the fuel used. It causes a dissimilar loss or pick-up of the elements in the remelting in the cupola. Therefore the analysis of similar castings made in two foundries using the same grade of pig iron will differ.

Experiments with pig iron melted in a cupola and poured into castings have shown that it influences the carbon formations in the castings, stated Mr. Lowry. The tests prove that: 1. Machinability is a factor related to the type of irons in the mixture. 2. Pig iron is a factor in the production of hardness which is a combination of graphitic carbon growth and combined carbon. 3. Combined carbon is not directly related to Brinell hardness nor to machinability. 4. There is an inherent expansion and contraction in pig iron that continues through to the casting. 5. Wear is not a function of hardness nor of combined carbon. It is primarily a function of carbon form.

Mr. Lowry acknowledged that some of these statements are contrary to the beliefs of engineers, but emphasized the fact that although a substance may be hard there is no proof that it will wear well. The carbon percentage in the structure varies with the total carbon and silica present in the iron, the result being a product of variable character in wearing quality.

Silvery Iron Often Not Properly Melted

The founder distrusts silvery iron principally because he does not melt it properly, according to Mr. Lowry. The temperature at which silvery iron melts demands that it be placed nearest the fuel charge in small pieces. Many foundrymen, however, throw it into the cupola helter-skelter and obtain unsatisfactory results.

High phosphorus irons are the cheapest to make and produce the highest grade of wearing castings. Low phosphorus irons are accepted because so little is known of the effect of carbon-silicon-phosphorus. Mr. Lowry admonished foundrymen to pay closer attention to the use of higher phosphorus, higher carbon and lower silicon mixtures for future castings.

"When the consumer of castings realizes that quality material going into the casting is related to the casting and not to the price he wishes to pay, he will be forced to change accordingly," said Mr. Lowry.

Foundry Reduces Losses from Poor Castings

Reduction in the loss of castings from 8 to less than 4 per cent has been accomplished in the brass foundry of the Ohio Brass Co., Mansfield, Ohio, according to Fred L. Wolf, technical superintendent, who

read a paper on "Brass Foundry Problems." The decrease was effected by means of a general campaign to improve every operation in the foundry and to develop an esprit de corps on the part of the entire organization.

Mr. Wolf described the loss record which is charted daily and posted on a bulletin board in the foundry. Each day's loss of every molder, classified in detail, is available for inspection by the molders and their instructors. Especially low losses are blocked off in blue and high losses in red to render them more conspicuous. The chart shows the total losses for several preceding days so that comparison with the detailed report for one day can be made. The average weekly loss for each instructor is plotted graphically, and every effort is made to promote competition among the instructors as well as among the molders.

Molders are paid on a piece rate for the good castings, and their castings are counted and kept separate until inspected. Defective castings are classified as dirty, shifted, etc., and are held for examination by the instructors and molders. The former are expert molders of semi-foreman capacity in charge of sections of the molding floor. They are paid a weekly wage plus a bonus determined by the number of men under them and by the percentage of loss.

A committee consisting of a member of the technical department, the manufacturing superintendent, the foundry foreman and the pattern department foreman handles gating problems and passes on all pattern equipment. The committee determines the method of gating all new work, the type of patterns to be made, the number of pieces in a flask and the location and size of risers. When completed the pattern is given a trial run of a few molds, the castings are examined and sawed in pieces to locate draws or shrinks, and finally the pattern is released when it is found to be acceptable.

Molding Sand Cost Cut Greatly

During the years 1922 and 1923, according to Mr. Wolf, molding sand cost an average of \$1 per ton of good castings produced. The next year control and reclamation work was inaugurated with the result that the sand cost only 41c. per ton of castings. In 1925 this expense was reduced to 18c. While the cost of recovering sand and preparing the sand mixtures is a considerable item, the saving in new sand cost more than offsets it and gives in addition the advantages of sand control.

Molding sand heaps are held at a bond strength of between .27 and .31-lb. per sq. in. tensile and 18 to 25 permeability, the difference depending upon the type of work being made on each particular floor. The permeability and bond tests are made by a foundry operative who also makes all sand additions. Each heap is tested at least once a week, some times every day. The results indicate the kind of sand to be added, and the sand mixtures are made up accordingly. Weekly tests for clay and grain fineness are made on three samples in the laboratory. The tests are necessary because bond strength is due not only to clay content, but also to the distribution of the clay. Hence when bond strength in the heap is low, the trouble may be caused by low clay or poor cutting. High clay is apt to give trouble because of difficulties in ramming and excess moisture. The clay contents of the heaps, therefore, is 7 to 9 per cent. Each heap averages 130 to 150 grain fineness. This is the mesh of the screen through which the sand would pass if averaged in size.

Mr. Wolf stated that the foundry carried in stock a No. 1 sand of grain fineness 160 to 180 and with a clay content ranging from 6 to 9 per cent. A coarser No. 2 sand with grain fineness of 110 to 120 and a clay content of 6 to 9 per cent also is carried. For bonding purposes a Gallia red sand of about 30 per cent clay content is used. The sand additions are mixed in a muller and wheeled onto the molding floors. Floor sweepings from the foundry are passed over a 16-mesh screen, and the fine material is used in the sand mixtures. About 60 per cent of the sand additions consists of refuse sand, none of which has been discarded for three years. The red sand is utilized

for rebonding, while the No. 1 and No. 2 sand are used to control permeability. Mr. Wolf said that all of the sand is Ohio sand which has replaced the Albany sand formerly used in the foundry.

Complete technical control over all departments of the foundry is maintained. The laboratories which house the technical department occupy about 6000 sq. ft. of floor space. The department is so closely connected with the plant processes that it functions almost as a manufacturing department. Mr. Wolf stressed the fact that electric melting furnaces have proved more satisfactory than oil-fired furnaces.

Daily Record of Foundry Costs

Albert E. Grover, Berea, Ohio, discussed foundry costs and displayed a number of forms which will give the small foundry a daily record of the cost of its castings. Cards show the time spent by each workman, and the overhead charge is distributed upon a basis of man-hours in each department. Accurate cost records, stated Mr. Grover, serve as a means for determining the selling price of castings and for effecting economies in the operation of the various departments of a foundry.

Herman Schneider, dean of the College of Engineering of the University of Cincinnati, told of "The Romance of Research," while J. M. Fitzgerald, former president of the Western Maryland Railway Co., talked on "The Foundrymen's Interest in Railroads." The mining and shipping of ore and the manufacture of pig iron were shown in motion pictures by George Richardson, manager technical publicity department Bethlehem Steel Co.

That the board of administration of the association favors the formation of local cost groups in various cities throughout the State was posted by Arthur J. Tuscany, secretary-manager of the organization. Already a group is meeting regularly in Cleveland and one is proposed in Hamilton, Ohio. Mr. Tuscany said that many members have printed the association's uniform trade customs on the back of quotation forms, invoice blanks and other literature. He further pointed out that the organization has opposed actively the proposed improvement to the Illinois River, and stated that the lowering of the level of the Great Lakes already has reduced the tonnage handled by the ore-carrying vessels and increased freight rates are likely to result. Increased pig iron prices probably would follow.

Research and Publicity for Cast Iron Needed

Mr. Tuscany repeated his suggestion of a year ago that the association take the initiative in developing research work on gray iron and possibly non-ferrous castings, and warned the members that unless something is done to sell gray iron more thoroughly to the casting-buying public, the industry constantly will grow smaller. He reported that during the past year a core oven survey was made to find out the type of core oven most satisfactory to the members. Efforts also have been expended toward bringing about and making standard the practice of indicating the estimated weight of a casting on the blueprint of the casting. Twenty-one new members, he said, have been added to the association since the last annual meeting. More associate members are desired, but the maximum has been set at 50.

President Seelbach Reelected

Walter L. Seelbach, Walworth Run Foundry Co., Cleveland, was reelected president. Other officers during the coming year will be C. C. Smith, Toledo Steel Casting Co., Toledo, vice-president, and Ed Sands, Superior Gas Engine Co., Springfield, Ohio, treasurer. Arthur J. Tuscany was reelected secretary-manager. The following members were elected directors for a three-year term: G. H. Alten, Alten's Foundry & Machine Works, Lancaster; H. Loudenslager, Loudenslager Foundry Co., Columbus; A. H. Kramer, Advance Foundry Co., Dayton; Charles T. Crawford, Reliance Foundry Co., Cincinnati, and J. H. Bruce, Bowler Foundry Co., Cleveland.

To stimulate interest in foundry problems the association extended an invitation to Indiana foundrymen to affiliate with it and become active in its work. The Indiana Foundrymen's Association has been dormant for a number of years and the Ohio organization hopes that it will in the future have the help and the co-operation of the foundrymen in its neighboring State.

At the luncheon on the first day of the convention Murray Seasongood, mayor of Cincinnati, welcomed the

delegates, and C. C. Smith replied on behalf of the association. A dinner and entertainment at the Hotel Sinton on Thursday and a dinner at Castle Farm, near Cincinnati, on Friday constituted the major social activities of the convention. An elaborate program was provided for the ladies by the Cincinnati hosts. R. J. Redmond, Buckeye Foundry Co., Cincinnati, was general chairman of the committee in charge of the convention.

GENERAL INQUIRY INTO RATES?

Multiplicity of Complaints Growing Out of Jones & Laughlin and Other Cases May Lead to Broad Investigation

WASHINGTON, Sept. 21.—Protests coming to the Interstate Commerce Commission against existing and proposed rates on iron and steel products have become so numerous that suggestions have been heard that the commission may make a general inquiry into the rate structure on iron and steel throughout the United States. Nothing official has come from the commission to indicate that such an investigation is being considered, but the number of complaints against the Jones & Laughlin, Memphis-Southwestern and Gulf port import rates, together with rates on pig iron and certain kinds of steel in Central Freight Association territory, has given color to the report. Moreover, it is pointed out that complaints against rates on petroleum have resulted in the commission issuing an order for what amounts to a general inquiry into rates applying on that product.

The proposed increases in rates on pig iron from Central Freight Association territory, particularly from furnaces in Ohio, to destinations in central territory, such as Illinois and Indiana points, and on wire rods from Ohio River crossings to Southern points, have been temporarily eliminated as an issue by reason of the fact that the railroads have canceled tariffs which would have advanced these rates. Also the matter of increased rates on imported iron and steel products through Gulf ports to St. Louis and Oklahoma points has been closed as a result of the commission permitting higher rates to become effective, while the Memphis-Southwestern case has been closed for the present. At the same time review of the action of the commission has been asked in the case of the Gulf port rates, and dissatisfaction with the other cases indicates that they may be reopened.

Outstanding Complaints Are Against Jones & Laughlin Scale

But the outstanding complaints have been made in connection with the Jones & Laughlin scale, which lowers somewhat the rates on iron and steel products from the Pittsburgh district to Middle-Western destinations, such as St. Louis, Indiana, Illinois, etc. The independent steel interests in the Pittsburgh district are especially dissatisfied with this scale, contending that the rates were not sufficiently reduced and that, as a result, Pittsburgh is discriminated against in favor of the Chicago district. Steel interests in Ohio also have protested against the Jones & Laughlin scale, although the nature of their complaints is somewhat different. The principal contention of the Ohio producers is that the scale disadvantageously changes their old relationship with Pittsburgh.

The commission last week permitted United States Steel Corporation subsidiaries to intervene in connection with the recent complaint of the Jones & Laughlin Steel Corporation against the Jones & Laughlin scale. The former interests take a position toward the Jones & Laughlin scale different from that of the independent producers in the Pittsburgh district. Moreover, the commission last week facilitated routine work in bringing together different phases of the Jones & Laughlin case by further suspending from Nov. 25 to Dec. 25, rates on iron and steel as they apply to Chicago from Brazil and Terre Haute, Ind. These

steps have no direct, but may have an indirect connection with the proposed increase in rates on iron and steel products within the switching district of Chicago, noted in THE IRON AGE of Sept. 16, page 801. These proposed increases are the result of the commission's decision in the Jones & Laughlin case. It is considered that this proposal might easily become a part of a general inquiry should one be ordered.

General Inquiry Into Oil Rates Sets Precedent

No nation-wide inquiry into iron and steel rates ever has been made, but in view of complaints against such rates, many of the protests being in sharp conflict, and by reason of the broad character of the Hoch-Smith resolution, which, it is contended, could be the basis for such a study, it is held to be conceivable that such an inquiry may be made. Rates on iron and steel, like rates on oil, which are to be studied, are affected by transportation through the canal. Oil rates through the canal are to form an important part of the inquiry as to petroleum rates, and study will be given to their effect on all-rail transcontinental and rail-and-water transportation from the standpoint of competition. Such issues frequently come up as they concern iron and steel rates and at times are even more complicated by reason of so-called back-haul and intermountain rates.

Chicago Switching Rates Command Attention

The proposed increases in rates on iron and steel products in the Chicago switching district may be considered a relatively minor phase of the general situation and the possibilities that exist as they affect the entire iron and steel rate structure. Yet the plan to increase Chicago switching district rates has received considerable attention. It is believed it will be the object of protests. The schedules have been filed to become effective Oct. 20, and protestants have until Oct. 10 to lodge complaints with the commission. Commonly, the commission suspends schedules under such circumstances, but it remains to be seen what action it will take in the present case. These tariffs were filed following a failure of the railroad and steel interests to agree upon rates. This fact has emphasized the belief that the schedules will be strongly protested and that the railroads, expecting such action, filed tariffs to leave the issue up to the commission for settlement.

Wants Lower Rates on Sheets and Plates from Middletown, Zanesville and Ashland

WASHINGTON, Sept. 21.—Two complaints, one against rates on iron and steel sheets and plates from Middletown and Zanesville, Ohio, and Ashland, Ky., to destinations in Central Freight Association territory, and the other against the rates on the same products from Middletown to points in Missouri, Oklahoma, Arkansas, Texas and Louisiana, have been filed with the Interstate Commerce Commission by the American Rolling Mill Co., Middletown.

The protest against rates to Central Freight Association territory asks for the establishment of a scale ranging from 6.5c. per 100 lb. for a distance of 1 to 5 miles up to 15c. per 100 lb. for a distance from 151 to 160 miles, while for greater distances sixth class rates are asked. The complaint says that the railroads had agreed to establish whatever scale of rates from Middletown and Ashland was prescribed by the commission in the Jones & Laughlin decision, but that this

was never done. The complaint expresses the belief that the Jones & Laughlin scale is excessive as it applies to iron and steel sheets and plates, and the rates suggested are somewhat lower than those provided in that scale.

In the other complaint request is made that Middletown be placed in the Cincinnati group for the purpose of rate making to points in the South. Newport, Ky., it is declared, is in the Cincinnati group, and consequently gets lower rates than Middletown.

Rates per 100 lb. from Middletown and Cincinnati to points in the South follow:

To	Middletown	Cincinnati
Fort Worth and Dallas, Tex.	89.5c.	84c.
Houston, Galveston, Tex.	75c.	68.5c.
Oklahoma common points	77c. to 89.5c.	74c. to 82c.
Little Rock, Ark.	58c.	51.5c.
Shreveport, La.	67c.	60.5c.

Railroads Withdraw Higher Rates on Pig Iron in C. F. A. Territory

WASHINGTON, Sept. 21.—Railroads have canceled tariffs proposing increased rates on pig iron in Central Freight Association territory and on wire rods from Cincinnati and other Ohio River crossings to Knoxville, Tenn., and as a result the Interstate Commerce Commission has entered orders discontinuing proceedings in these cases. It had suspended the tariffs pending hearings. Representative of the canceled pig iron tariffs were proposals to increase the rate from Toledo, Ohio, to South Bend, Ind., from \$2.65 to \$2.90 per gross ton and the rate from Cleveland to Indianapolis from \$3.15 to \$3.53. The commission at the same time entered an order giving railroads relief from the long-and-short haul section as to pig iron rates in Central Freight Association territory pending hearing.

Typical of the canceled tariff which would have increased the rate on wire rods was the proposal to advance the rate from Cincinnati to Knoxville from \$3.19 to \$6.94 per gross ton.

Postpone Effective Date for New Rates on Steel Imported to St. Louis

WASHINGTON, Sept. 21.—The East Side Manufacturers' Association, Granite City, Ill., has filed a statement with the Interstate Commerce Commission in which it restates its position that whatever rates on iron and steel may be found proper from the St. Louis territory they should not exceed "in measure and relativity the rates which the commission found proper" in the Memphis-Southwestern case. These intervening interests at the original hearing contended that discrimination resulted from the application of the relatively different level of rates and that unreasonable relationships existed between St. Louis and the Texas Gulf ports on iron and steel articles destined to Oklahoma and Kansas. The statement was filed in view of the request of a number of Kansas City, Mo., iron and steel interests for a review of the recent decision of the commission prescribing maximum reasonable rates on imported iron and steel from Gulf ports to the destinations named.

The commission has modified its recent order authorizing rates equivalent to domestic rates on iron and steel imported through New Orleans and other Gulf ports, exclusive of Texas ports, to St. Louis, changing the effective date to Nov. 19 instead of Sept. 19.

Sales of Stokers Decline in August

In August 104 stokers with a total of 38,852 hp. were sold by 12 establishments, according to the Department of Commerce, Washington. Of these stokers 25 were installed under fire-tube boilers and 79 under water-tube boilers. The sales for the month showed a decline from those for July and June, 125 stokers having been sold in July and 175 in June. A gain is shown, however, over orders taken in August, 1925, when 91 stokers were sold.

Will Appoint Promotion Engineer

Concrete Steel Institute Also Adopts Standard Code at Semi-Annual Meeting

Thirty-one member companies, represented at the semi-annual meeting of the Concrete Reinforcing Steel Institute, held Sept. 13 to 15 at French Lick Springs Hotel, French Lick, Ind., approved the appointment of a promotion engineer, who is to devote his entire time to association work on a national basis. A standard code for reinforced-concrete construction was also adopted, after recommendations for it had been presented by W. F. Zabriskie, vice-president Gabriel Steel Co., Detroit. An outline was presented to the assembly of the work which has been done by the committee on foreign steel, of which D. B. Knowlton, manager Dudley Bar Co., Birmingham, is chairman.

In his opening address President W. H. Pouch, Concrete Steel Co., New York, reviewed the progress made during the past six months both by the institute and the reinforcing bar industry.

Tendency Is Towards More Shop Fabrication

The economic value of reinforced concrete is the impelling force behind its development, said A. E. Lindau, American System of Reinforcing, Chicago, in addressing the meeting. While the peak of development has been passed, new use for the material is constantly being found. It is seriously proposed, for example, that the road bed of the main lines of our railroads be provided with a reinforced-concrete slab as a track support.

To obtain the full benefits of shop methods, Mr. Lindau said, standardization is necessary. A great step in this direction was the universal adoption of 11 standard sizes of reinforcing bars and the standardization of spiral rods. More and more shop fabrication is the tendency on the score of economy alone. In view of the fact that merely placing the bars in the forms costs \$15 to \$20 per ton while fabrication at the shop costs about one-half of that amount, it is clear that field fabrication is a thing of the past.

Reinforcing Bar Output Increasing Faster Than Total Steel Production

Mr. Lindau also brought out that there is a relation between the amount of steel produced and the total population of the country. No doubt the per capita consumption varies considerably in different localities but it probably increases with growing density of population. The significant thing, however, is that the rate of increase in steel consumption has been greater than the rate of gain in population. At the present time our population is increasing at the rate of 1,500,000 per year, or about 1½ per cent. The consumption of rolled steel products, however, is increasing at approximately 1,000,000 tons per year, or 3 to 3½ per cent, which is more than twice the rate of gain in population. In 1910, however, steel output was growing three times as fast as the population. Unless some new and unforeseen demand develops in the future, it is probable that the percentage increase in steel consumption will gradually diminish until it becomes more nearly parallel to the percentage increase in population.

An examination of the growth of the reinforcing bar industry shows that consumption is increasing at the rate of 30,000 tons per year, or about 5 per cent. This is more than one and one-half times the gain in the consumption of all rolled steel products and three times the increase in population.

Production of galvanized sheet metal pails and tubs in July is reported by the Department of Commerce at 108,631 dozens, valued at \$34,592. While this is a higher output than for the three preceding months, it is far below the record of the first three months of the year. Shipments have been running well ahead of production for several months, the amount shipped in July having been 119,663 dozens, valued at \$400,285.

To Institute Course on Industrial Advertising

Marquette University, Milwaukee, has decided to institute a series of courses in industrial advertising as a result of efforts on the part of the Milwaukee Association of Industrial Advertisers, a unit of the National Industrial Advertisers' Association, which is endeavoring to secure the cooperation of universities throughout the United States along similar lines. H. P. Sigwalt, advertising manager Milwaukee Corrugating Co., is president of the Milwaukee group as well as secretary of the National association.

Marquette University will be furnished lecturers from the ranks of Milwaukee industrial advertising managers and several prominent men of the industry from other cities will be brought to Milwaukee during the college year. The course will be under the direction of Dean J. Freeman Pyle of the Marquette University School of Business Administration.

At a conference attended by 85 advertising men and students, Dean Pyle expressed appreciation of the cooperation of the organized industrial advertisers, especially because he feels that the cycle of importance in business has swung from the production end to that of marketing, selling and advertising.

Steel-Frame Cylindrical Houses Built in Germany

A newly patented style of house construction in Germany gives a cylindrical dwelling with asbestos cement walls, on a skeleton of steel weighing about 8 tons, according to Vice-Consul Andrew Gilchrist, Leipzig. The houses are of two floors and contain six rooms and an attic. After the foundation has been completed the steel frame can be erected within four days by a few workmen; the dwelling then is rapidly pushed on to completion.

All parts of these houses are interchangeable and it is planned to build them in series at the factory, to be delivered ready for assembling. Steam heat is furnished by means of a boiler combined with the kitchen range. The builders estimate the price of this house at present between 20,000 and 25,000 marks (\$4,761 and \$5,951). But they believe that this sum will be lowered if the houses prove popular and they can furnish them along standard specifications in quantities.

Westinghouse Reorganizes Engineering Personnel

Reorganization of the general engineering department of the Westinghouse Electric & Mfg. Co. has been announced by H. W. Cope, assistant director of engineering. The reorganization has necessitated the reallocation of several engineers, four being elevated to managers of engineering. These are F. C. Hunker, manager of central station engineering; S. B. Cooper, manager of railway engineering; G. E. Stoltz, manager of industrial engineering, and W. E. Thau, manager of marine engineering. S. A. Staeger, formerly section engineer in charge of the paper mill section, has been appointed industrial engineer, giving particular attention to the paper mill industry.

Other appointments are:

Central station engineering—C. A. Powell, engineer, generating station engineering; R. D. Evans, engineer, transmission engineering, and C. A. Butcher, engineer, substation engineering.

Railway engineering—H. K. Smith, engineer, heavy trac-

tion engineering; G. M. Woods, engineer, light traction engineering, and A. H. Candee, engineer, gas-electric traction engineering.

Industrial engineer—E. M. Bouton, engineer, elevator engineering; C. W. Drake, engineer, general industrial engineering; C. T. Guilford, engineer, textile engineering; C. H. Matthews, engineer, mining engineering; O. Needham, engineer, steel mill engineering; J. W. Speer, engineer material handling engineering; W. W. Spratt, engineer, paper mill engineering, and E. B. Dawson, engineer, electrochemical and electrometallurgical engineering.

Steel Barrels Show Decline in Orders and Production

Unfilled orders for steel barrels for delivery within 30 days totaled 368,578 in August, as compared with 386,536 in July and 407,184 in June. Unfilled orders for delivery beyond 30 days also declined, amounting to 802,420 barrels, the smallest total since May, according to statistics compiled by the Department of Commerce, Washington. Production of barrels, at 523,037, and shipments, at 511,542, also declined as compared with the totals for July and June. Output, however, showed a gain as compared with that of the same month a year ago. Production in August, 1925, was 498,449. Stocks of barrels on Aug. 1, at 38,874, were the smallest since July, 1924. At the end of the month they had risen to 50,369 barrels, the second largest total this year.

Claims Longer Life for New Plug and Ring Gages

Cylindrical plug and ring gages designated as D. L. process gages are being placed on the market by the Pratt & Whitney Co., Hartford.

These gages are the result of research begun by the company about a year ago with the object of developing a cylindrical plug and ring material which, in combination with suitable heat treatment the special machine lapping finishing process used by the company, would bring about an appreciable lengthening of the life of plugs and rings. The material from which these gages are made is said to be a special alloy manufactured exclusively for the company, and the heat treatment to have developed in the company's laboratories.

It is claimed that in tests on production work these gages have shown marked increase of life as compared to steel gages. With the heat treatment given this material the gages, it is said, do not show glass hard under the file test. It is also stated that, paradoxical though it may seem, the gages do not wear as well when glass hard as they do when given a heat treatment which leaves them slightly soft. This phenomenon is the subject of a special research being made by the company.

100 Years of Portland Cement

In 1924 Portland cement completed a century of service. In commemoration thereof the United States Bureau of Mines has just issued a pamphlet of 40 pages devoted to the history of the cement industry, with particular reference to the production of cement in the United States. American output from 1870 to 1924, inclusive, aggregated 1,793,101,761 bbls. Prices at a number of principal consuming points are given monthly for 1923 and 1924, and much other information is covered.

Schedule of the next installments of the Business Analysis and Forecast, by Dr. Lewis H. Haney, Director New York University Bureau of Business Research, follows: Sept. 30—General Business Outlook; Oct. 14—Activity in Steel Consuming Industries; Oct. 21—Position of Iron and Steel Producers.

Business Analysis and Forecast

BY DR. LEWIS H. HANEY

DIRECTOR, NEW YORK UNIVERSITY BUREAU OF BUSINESS RESEARCH

Current Statistical Data, Considered Independently of Trade Opinion, Indicate That:

CURTAILMENT in steel production and lower prices in a few months are forecast.

Pig iron outlook is for firmer

prices in near future, with foreign competition a restraining factor.

Scrap prices likely to weaken and decline.

PRODUCTION of steel ingots continued its upward trend in August. The average daily output for that month was 154,022 tons against 140,425 tons in July, and 131,577 tons a year ago. This represents an increase for the month which is larger than usual, and our adjusted index shows production to have been approximately 25 per cent above the estimated normal trend of the country's requirements.

On the other hand, unfilled orders decreased, and, though the decline was not large, it was greater than usually occurs in the month of August. At 3,542,000 tons, the unfilled orders of the Steel Corporation were only a little above the low point of the year and very near to the 1925 low. Prices, however, have remained stable.

The last three months make a period which is the first since 1921 in which so long sustained an increase in production has occurred at the same time with a decrease in unfilled orders. Even in 1921, moreover, conditions were very different. Then production was far below normal, while now it is above normal. Prices, too, were declining in 1921, while in recent months they have been fairly firm. What does this unusual condition mean?

Three Factors in the Steel Situation

THE fact that prices are firm shows that the demand for finished steel has been well up to the production, which, of course, means that consumption has also been above normal. It is, moreover, trite but true to say that this above-normal demand has been chiefly for current or nearby requirements, since forward buying has been so small.

In the second place, it is apparent that the continuation of the present level of steel prices depends upon the persistence of a very heavy rate of consumption. Forward buying has not been much of a factor and is not likely to become so. Current buying has been very large and will probably hold up for another month, but that it will be sustained even till the end of the year is becoming more doubtful. The decline in unfilled

orders suggests that there was a reduction in buying toward the end of August. We do not believe that unfilled orders have lost their significance. It is true that they represent a relatively small part of demand, but their variation from month to month is still indicative of buying.

In the third place, the situation revealed in the chart, showing as it does that production is much above normal while the backlog of unfilled orders is very low, means that any considerable decline in the activity of steel-consuming industries would soon be reflected in price weakness.

It, therefore, seems highly probable that curtailment in steel production and lower prices will be witnessed in a few months. Production is almost exactly as much in excess of normal as it was in August, 1923. Some recession in production is probable toward the end of this year, though in the next month or two it will probably be manifested in the shape of a mere failure of the ingot output to come up to the usual seasonal gains.

Four Grounds for Expecting Firmer Pig Iron Market

CONTRARY to the case of steel, the pig iron output showed a downward trend in August, and this has strengthened pig iron markets. It means a more favorable relation between the quantity of iron produced in comparison with the steel output. Last April our index of pig iron production was 122.8 against a steel index of 113.3. Now the situation is reversed, the iron index being only 116.6 in comparison with 125.2 for steel. This more desirable balance had become necessary, as during the summer there were clear signs of accumulating pig iron inventories, which found expression in a steady weakening of prices.

At the present time some improvement in pig iron prices seems probable. The August average prepared by THE IRON AGE was \$19.46 against \$19.52 in July. This small decline, however, does not reflect the sta-

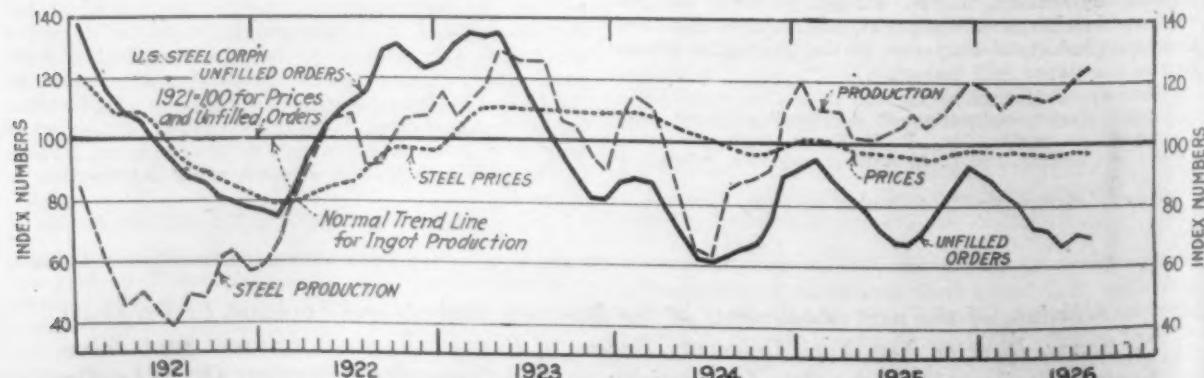


Fig. 1—Prices Have Remained Firm and Production Being Above Normal, Consumption Is Likewise. So high has been consumption that it may not be sustained till the end of the year. That proving to be the case, price weakness, in the light of low backlog of orders, may be the reaction.

In This Issue

Reduces labor turn-over to a minimum by inexpensive industrial relations program.—Manufacturing concern of moderate size offers group insurance at a low rate. Employees conduct their own credit and sick benefit associations. Apprentices are selected from ranks of high school graduates with vocational training.—Page 835.

Downward trend of commodity prices is not necessarily an unfavorable business omen.—August index figure was lowest in 23 months. This may be the natural result of improvement in methods and appliances. As population is steadily increasing, and with it a widening demand, a larger dollar volume of business is not incompatible with lower prices.—Page 870.

Physical properties of bronze castings are improved greatly by proper heat-treating.—For example, heat treatment will increase the tensile strength of an aluminum bronze as much as 25 per cent, though some engineers and even metallurgists will not look beyond chemical content.—Page 841.

Lack of capable industrial management handicaps many large British concerns.—While some are excellently managed, others suffer under the direction of lawyers, accountants and financial experts who are poorly qualified to act as industrial leaders.—Page 845.

Charge more for gray iron castings and make them better.—Buying on price alone, thus forcing the foundryman to turn out a cheap product, often hurts the entire industry. For if the castings fail, the buyer frequently abandons the use of gray iron, when a superior product, made by more rational cupola melting, would have held the customer and saved money for him.—Page 857.

Rolling is eliminated in making this seamless tubing.—New Pilger mill makes tubes directly from ingots, which are cast in round molds.—Page 846.

Pointing to prosperity of Steel Corporation, Germans prophesy success for recently formed Ruhr steel trust.—Huge American organization serves as model for the United Steel Works Corporation formed this year.—Page 842.

Losses from defective castings cut in two.—Record of daily loss is posted where all may see it. Each molder's daily record is available to inspection by molders themselves and executives. High losses are marked in red; low losses in blue. Percentage of rejections is reduced from eight to four.—Page 857.

Are lower steel prices and reduced output in prospect?—“It . . . seems highly probable that curtailment in steel production and lower prices will be witnessed in a few months,” declares Dr. Haney.—Page 862.

August building construction highest on record, with single exception.—In 37 Eastern states the total was close to 601 million dollars, exceeded only by August, 1925.—Page 837.

Molding sand cost cut from \$1 to 18 cents per ton of castings produced.—Brass foundry finds that cost of recovering and preparing sand mixture is well repaid in lower ultimate sand cost and in reduction of defective castings through sand control.—Page 858.

Pig iron market strengthened by lower output, says Dr. Haney.—Forecasts improvement in pig iron prices, as scrap and coke prices have risen and iron output is small in relation to steel.—Page 865.

Before anyone leaves this company's employ he is interviewed by an official.—Chain manufacturer sees to it that the man who goes off the payroll leaves with goodwill toward the company.—Page 837.

Photomicrographic dark room has labyrinth entrance which admits air but not light.—To facilitate comparison of metallographs the light on the specimens is kept strictly uniform.—Page 840.

Recommends high phosphorus irons for gray iron castings subject to wear.—Such irons are the cheapest to make and produce the highest grade of wearing castings, says metallurgist.—Page 857.

Pittsburgh foundries establish cooperative arrangement for training apprentices.—Boys in pairs, paid while at work, alternate every two weeks between the shop and the public school. Lesson material has been copyrighted.—Page 873.

CONTENTS

September 23, 1926

Plan Wins Employees' Good Will	835
Wheel Makers Expand Laboratory	838
Heat Treatment Improves Bronzes	841
Though Down, Britain Is Not Out	843
Make 50-Ft. Tubes from Ingots	846
Steel Men Visit Swedish Plants	851
Ohio Foundrymen Discuss Problems	857
European Foundrymen Arrive Here	866

Copy Steel Corporation.....	842
Issues Data on Iron Ore.....	842
Intervene in Jones & Laughlin Rate Case.	856
To Discuss New Uses of Bituminous Coal	856
General Inquiry Into Rates.....	859
Lower Rates Wanted.....	859
Railroads Withdraw Rates on Pig Iron in C. F. A. Territory.....	860
Will Appoint Promotion Engineer.....	860
To Institute Course on Industrial Adver- tising	861
Steel-Frame Cylindrical Houses Built in Germany	861
Westinghouse Reorganizes Engineering Personnel	861
Correspondence	872
Training for the Foundry.....	873

NEW EQUIPMENT

Engine Lathe with Single Lever Speed Change Control.....	852
Single and Double Disk Grinders.....	852
Improved Single-Spindle Gridley.....	853
Small Model Mult-Au-Matic.....	854
Hydraulic Straightening and Forcing Press	855
Revises Line of Self-Opening Die Heads.	855
Claims Longer Life for New Plug and Ring Gages.....	861

MEETINGS

Program for Convention of Steel Con- struction Institute	840
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Automotive Accessories Association.....	840
American Welding Society Program.....	840
Steel Treaters' Meeting.....	873
Electrochemists' Meeting	893

STATISTICAL

Building Construction Increases.....	837
Distribution of Pipe Fittings.....	842
Car Building in 1925.....	845
Lake Ore Movement.....	845
Fabricated Steel Plate Bookings.....	850
Active Expansion of Coke Plants.....	856
Employment in Metal-Working Plants Gains	856
Sales of Stokers.....	860
Steel Barrels Show Decline in Orders and Production.....	861
100 Years of Portland Cement.....	861
Sheet Sales	893

DEPARTMENTS

Business Analysis and Forecast.....	862
Editorial	870
Iron and Steel Markets	874
Comparison of Prices	875
European Steel Markets	876
Prices, Raw and Finished Products	877-879
Structural Awards and Projects	891
Non-Ferrous Metals	892
Personals	894
Obituary	895
Machinery Markets	899

On the Meetings of Technicians

THAT industrial technology jumps international barriers is an old thought revived by this issue, with its several contributions of foreign interest. Interchange of experience and opinion among the nations was merely hobbled by the war. The growth of the helpful spirit of meeting in local, regional, country and world groups goes on apace.

The great gathering around the new science of metal treating, in progress this week at Chicago, and the foundry congress next week in Detroit stand only as illustrations. The ever increasing willingness to add to the general store of technical knowledge—not to mention matters also of commercial import—has been a factor making for the indispensability of journals such as THE IRON AGE.

For News Summary See Reverse Side

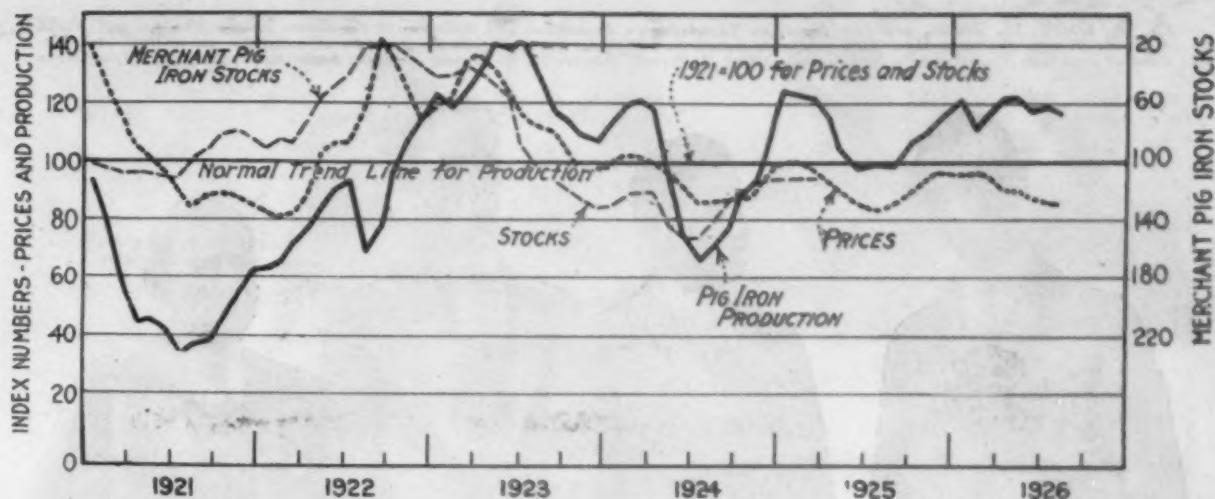


Fig. 2—With Reduced Output and Little Change Downward in Prices of Pig Iron in August, Pig Iron Markets Have Strengthened, Taking into Account Also Relatively High Scrap Prices and Higher Coke Prices

bility of pig iron prices in recent weeks. The probability of firmer iron markets rests upon four grounds: (1) Production has decreased and the upward trend of pig iron stocks has been checked. (2) Pig iron production is now small in comparison with that of steel. (3) Scrap prices have advanced considerably and are now at a point where pig iron is below a normal relation with the scrap market. (4) The price of coke is gradually rising.

It is believed that it would take only a small draft on pig iron stocks to cause a little advance. In any case, the outlook is for firmer iron markets in the near future, though no large or long sustained rise is at all probable. Competition from foreign sources on the Eastern seaboard is a restraining factor.

Notable Stabilization in Prices

AS to the iron and steel price structure, the outstanding fact is that the period of stabilization has been prolonged. Even our curve of black sheet prices has steadied and straightened out, the August average being unchanged from the July figure. Nails, bars and billets have all remained practically steady since last November. The pig iron markets have sagged steadily

for six months, but have now been practically stable for about ten weeks; while coke has shown no violent fluctuations, but rather a gradual upward trend. Only scrap prices have moved sharply.

As to scrap, we find a very interesting situation. The consumers of this material are evidently well supplied and are not buying in any large quantities. Trade reports that the advances in scrap during recent months have been largely the result of dealer speculation appear to be confirmed. The average of heavy melting steel scrap at Pittsburgh was \$15.50 in June, from which point it rose to \$18.50 in early September. Now the market is hesitating and showing signs of weakness.

After a short period of irregularity we believe that scrap prices will weaken and decline. The grounds for this opinion are as follows: (1) Scrap is above a normal relation with pig iron prices. (2) It is also relatively high in comparison with billets. (3) Various statistical barometers which we maintain forecast lower scrap, among these being our index of the rate of change in unfilled orders. It is highly probable, therefore, that some readjustment will occur which will involve strengthening of iron markets at the same time that scrap prices are reduced.

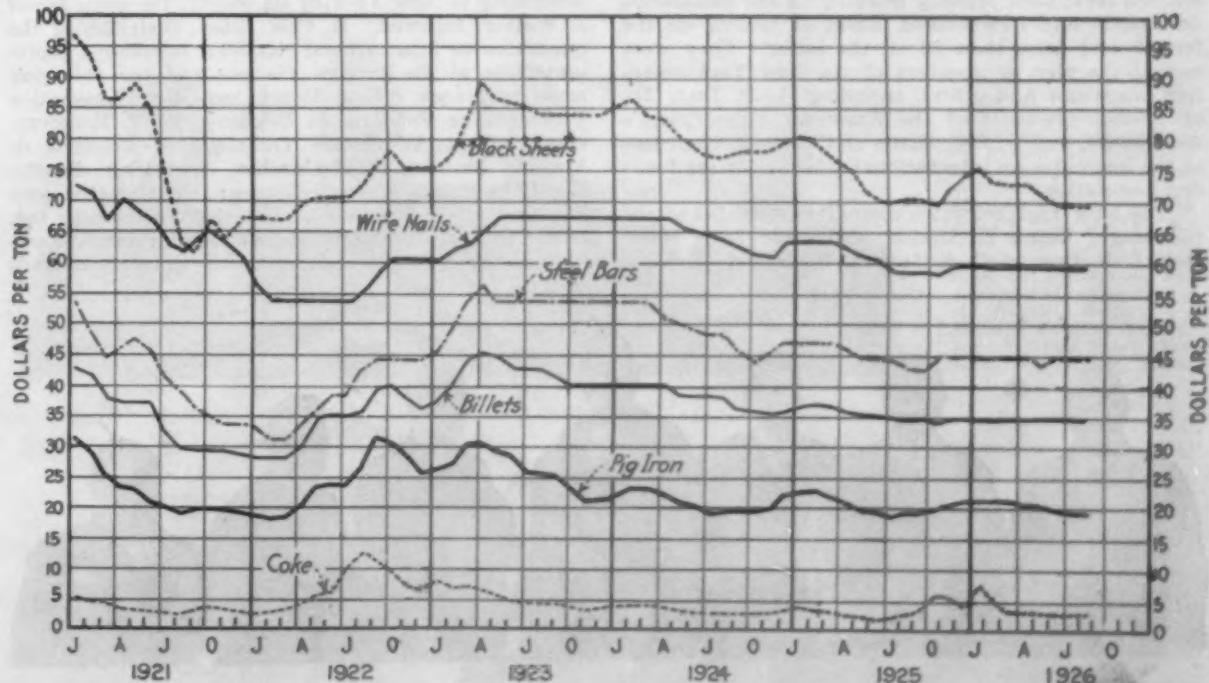


Fig. 3—The General Trend of Iron and Steel Prices Shows a Prolonged Period of Stabilization. Even the curve for black sheets has straightened. Only scrap prices have moved sharply

A. B. ROOT, Jr., Boston, president American Foundrymen's Association and chairman of the dinner for overseas visitors; Verne E. Minich, chairman New York reception committee; H. Cole Estep, Cleveland, chairman of committee on international relations of American Foundrymen's Association; Alfred E. Howell, Somerville, N. J., past president American Foundrymen's Association



European Foundrymen Arrive Here

About 100 From Great Britain, France, Germany, Belgium, Italy and Other Countries Reach New York on Way to International Congress in Detroit

RETURNING the visit which American foundrymen made in Paris in September, 1923, to attend the first International Foundry Congress, about 100 European foundrymen have arrived in New York within the past few days on their way to Detroit to participate in the second International Foundry Congress, which will be held in conjunction with the annual convention of the American Foundrymen's Association.

A banquet and other entertainment were provided for the foreign visitors by the New York reception committee, headed by Verne E. Minich, president of the American Foundry Equipment Co.

Some of the Europeans arrived on various steamships last week, but the major part of the group reached New York Monday morning on the steamships *Lancastria* and *Deutschland*, about 40 coming on the former and more than 20 on the latter. They were met at the pier by members of the New York reception committee and others, including A. B. Root, Jr., of Boston, president of the American Foundrymen's Association, and H. Cole Estep of Cleveland, chairman of the committee on international relations of the foundry association.

The New York reception committee consisted of the following: Verne E. Minich, chairman; John Howe Hall, E. K. Browne, C. A. Tanner, William H. Nicholls,

J. S. Ahrens, Fritz J. Frank, W. E. Paulson, Alfred E. Howell, Oliver Smalley, E. C. Kreutzberg, Dr. Richard Moldenke, W. E. Kugemann, W. J. Kirby, A. I. Findley, William J. Kihn, Andrew H. Petersen, Arthur E. Barlow, John L. Carter, Joseph Zimmerman, Thomas H. Williams, W. D. Goldsmith, Frederick H. Landolt, E. A. Fitch, R. E. Moore, R. Clark, J. H. Puccini, W. W. Macon, Adolf Bregman.

After their arrival the overseas foundrymen were given an opportunity for sight-seeing or for visiting plants in the vicinity of New York. Tuesday evening at 7 o'clock a dinner of welcome took place at the Hotel Pennsylvania, presided over by A. B. Root, Jr., president American Foundrymen's Association, who welcomed the delegates to the United States. A welcoming to New York by its mayor, the Hon. James J. Walker, followed. H. Cole Estep, chairman of the committee on international relations, introduced representatives of the foreign visitors and the following made responses: Paul Ropsy, president Association Technique de Fonderie de Belgique; E. V. Ronceray, vice-president Association Technique de Fonderie de France; Dr. Ing. Geilenkirchen, managing director Verein Deutscher Eisengiessereien; John Cameron, past president of the Institute of British Foundrymen; Ing. Carlo Vanzetti, president Italian Foundrymen's Association. The principal address at the dinner was made



GERMAN delegates, left to right: Max Jul. Unger, of Unger & Co., Werdau; Fr. Koppersbusch, of Koppersbusch & Sohne, Gelsenkirchen; Direktor Hellmund, of Eisen-und Stahlwerk Werner, Dulken; Dr. Ing. Geilenkirchen, managing director Verein Deutscher Eisengiessereien, Dusseldorf; Direktor Wilhelm Linnmann, of Eisener Eisenwerke, Essen-Altenessen; Fritz Buch, of Carl Buch G. m. b. H., Weidenau; Heinz Kremener, of Alexander Kremener, Hartung A. G., Berlin

BRITISH Delegates, left to right: John Cameron, South Bank Iron Works, Kirkintilloch, Scotland, past president Institute of British Foundrymen; W. B. Lake, Lake & Elliott, Ltd., Braintree, Essex, England; S. H. Russell, partner of S. Russell & Sons, Bath Lane Foundry, Leicester, England, vice-president Institute of British Foundrymen; James M. Primrose, Grangemouth Iron Co., Falkirk, Scotland



ITALIAN delegates, left to right: Ing. Comm. Ugo Fano, managing director Fonderia Nebiolo, Torino; Guido Fano, son of Ugo Fano; Mrs. de Benedetti and Ing. Emilio de Benedetti of the executive commission of the General Industrial Confederation of Italy, Torino

SWISS delegates, left to right: Hans Aebi, of Societe Aebi & Co., Berthoud; Paul Hegi, Fonderie Hegi & Co., Oberburg, pres Berthoud; Bucher Guyer, Nieder Weningen, Zurich



ITALIAN and Belgian delegates, left to right: Ing. Franco Ratti of Soc. Franchi & Gregorini di Brescia, Milano; Ing. Carlo Vanzetti, president Italian Foundrymen's Association and managing director of the Fonderia Milanese di Acciaio, Milano; Paul Kops, president Association Technique de Fonderie de Belgique and managing director of Belgian Griffin Co., Merem-les-Aavers, Belgium; Ing. Agostino Rocca, Dalmone Steel Works, Milano

FRANCESCO GARRONE and Luigi Garrone, sons of Carlo Garrone of Torino, Italy; Carlo Garrone, managing director Fonderia Garrone, Torino, Italy; Luigi Carlo Guasco, foundry proprietor, Torino, Italy





GERMAN delegates, left to right: Direktor Karl Jaeger, of Reutherwerk, Mannheim-Wiesloch; Direktor J. H. Fahr, of Maschinenfabrik Fahr, Stockach-Baden; Dr. Dr. Greiner, of Maschinenfabrik Esslingen, Esslingen-Neckar; Erwin Simon, of M. Streicher, Stuttgart-Cannstatt; Direktor Kutzmeyer, Swabische Hüttenwerke, Königsbronn; Fabrikant Gross, Jr., of Bugelschenfabrik A. G., Schab Hall; Direktor Alfred Simon, of M. Streicher, Stuttgart-Cannstatt; Direktor Nagel, manager Badische Maschinenfabrik & Eisengießerei, Durach-Baden.

by John A. Penton, Penton Publishing Co., Cleveland.
From New York the visitors went to Philadelphia, where they attended a dinner Wednesday evening as guests of the Philadelphia Foundrymen's Association, after spending a part of the day in sightseeing and in attending the Sesqui-Centennial Exposition. A report of the Philadelphia dinner and the subsequent entertainment for the visitors will be published in the Sept. 30 issue of THE IRON AGE. The program for the

latter part of this week includes a trip to Buffalo and Niagara Falls. A dinner will be given at Buffalo Saturday evening. After sight-seeing on Sunday the party will leave on a steamer in the evening for Detroit, arriving there Monday morning. The Hotel Statler will be headquarters for the foreign delegation during the convention of the American Foundrymen's Association and the International Foundry Congress.

Additional Foreign Visitors

A list of the foreign visitors was given on page 782 of last week's issue. To this may be added the following:

Dir. Kutzmeyer, Swabische Hüttenwerke, Königsbronn, Germany.

Geh. Kommerzienrat Dr. Ing. v. Opel, Russelheim-am-Main, Germany.

C. F. Atkinson, Wilson Mathieson, Leeds, England.

F. Blackwell, Diamond Foundry Co., Luton, England.

Morten Grindal, Bergen, Norway, and Mrs. Grindal. Sixteen Nilsson, Sveriges Maskinindustriforening, Stockholm, Sweden.

In addition to the official party a separate group came early last week on a trip especially arranged by the American Express Co. After spending a few days in New York this group left for an inspection trip to manufacturing plants and will reach Detroit in time for the foundry conventions, but are also paying a visit this week at the convention and exhibition of the American Society for Steel Treating in Chicago. This latter group, all from Germany, was as follows:

D. Hermann Neu, Kommerzienrat Malzoff, A. Hepenstein, Dipl. Ing. Walter Luyken, D. Stahn, Erich Winkhaus, Dipl. Ing. H. Eddelbüttel, Ing. Fritz Mertens, Ober-Ing. André, Robert Neu, Hans Nathusius, D. Joseph Koenig, Dipl. Ing. Kreidler, D. Pingel, D. Richard Pieper, Dr. Flemmich, Dr. Ernst Schuermann, Dr. Koester, Dr. Dietrich, Mrs. Dietrich, Ing. Harms.

August Fabricated Steel Bookings Best Since October

WASHINGTON, Sept. 21.—The largest since October, 1925, actual bookings of fabricated structural steel in August of the present year aggregated 214,580 tons, or 82 per cent of the capacity, 260,455 tons, of 180 firms. According to the Department of Commerce bookings in October of last year represented 89 per cent of capacity.

Shipments in August amounted to 250,100 tons, or also 82 per cent of capacity.

Increasing Imports Into Great Britain

WASHINGTON, Sept. 21.—Imports of iron and steel products into the United Kingdom during August exceeded exports by the widest margin, 145,382 gross tons, of any month since the coal strike went into effect, according to the Iron and Steel Division, Department of Commerce. Receipts of these products during August totaled 315,066 tons, or 16.3 per cent more than during July. Exports, on the other hand, amounted to only 169,684 tons or 30.4 per cent less than those of the preceding month.



GUIDO VANZETTI, son of Carlo Vanzetti of Milano, Italy; Ing. Or. Uff. Amedeo Felicicotti, president S.A. Fabbrika Molle ed Accessori per Rotabili "Fram," Torino, Italy



C. G. RAMSAY and William Jolley, of Metropolitan-Vickers Electrical Co., Ltd., Manchester, England



COMM. ANTONIO GALTAROSSA, director of Soc. Fratelli Galtarossa and president Industrial Federation of Verona, Verona, Italy; Ing. Gino Modigliani, managing director Soc. Olivetti, Ivrea, Italy



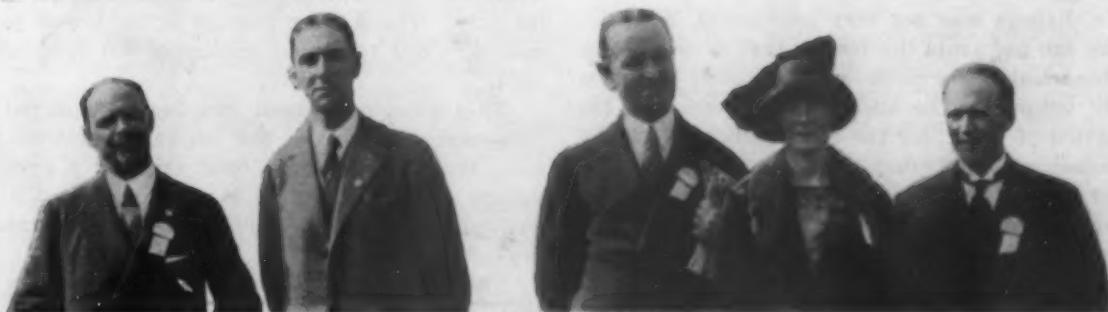
GERMAN delegates, left to right: Kommerzienrat Demmer, Gebr. Demmer, Eisenach; Heinrich Werther of Magdeburg & Werther, Halle-Saale; Mr. Monforts, of Eisengiesserei Monforts, München-Gladbach; Prof. Dr. Piwowarski, Technische Hochschule, Aachen; Dipl. ing. Flender, of A. Friedr. Flender & Co., Bocholt; Generaldirektor Hugo Eicken, W. Kraft, A. G., Gevelsberg; G. A. Schmole, Jr., Schmole & Co., Menden



FRENCH delegates, left to right: Mr. Montupet, son of Leon Pierre Montupet; Claude Primet, of Fonderies Montupet, Paris; Mr. Primet, son of Claude Primet; Leon Pierre Montupet, Fonderies Montupet, Paris



DR. RICHARD MOLDENKE, who was prominent in the New York reception committee, with Morten Grindal, Bergen, Norway, who will spend several months in the United States



H. MAGDELENAT, vice-president Association Technique de Fonderie de France and managing director of S. A. des Usines de Rosières, Bourges, France; Paul Thomé, managing director of S. A. des Fonderies Thomé Fils & Cromback, Nouzonville, France

BRITISH delegates, left to right: F. Blackwell, works manager Diamond Foundry Co., Luton, England; Mrs. H. D. Campbell, and H. D. Campbell, of Shaw Glasgow, Ltd., Maryhill Iron Works, Glasgow, Scotland



BRITISH delegates, with Stanley G. Flagg, Jr. (in center), chairman of Philadelphia reception committee. Left to right: J. A. E. Wells, of Edgar Allen & Co., Ltd., Sheffield; Mrs. Wells; Mr. Flagg; Mrs. Frank Russell; Frank Russell, managing director General Refractories Co., Ltd., Auldhame House, Worksop, Notts, England

ESTABLISHED 1855

THE IRON AGE

A. I. FINDLEY, *Editor*

W. W. MACON, *Managing Editor*

Member of the Audit Bureau of Circulations and of
Associated Business Papers, Inc.

Published every Thursday by the IRON AGE PUBLISHING CO., 239 West 39th Street, New York
C. S. BAUR, *General Advertising Manager*

F. J. Frank, *President*

Owned by the United Publishers Corporation, 239 West 39th Street, New York. A. O. Pearson, *Chairman*. F. J. Frank, *Pres.* C. A. Musselman, *Vice-Pres.* Fred G. Stevens, *Treas.* H. J. Redfield, *Secy.*

BRANCH OFFICES—Chicago: Otis Building. Pittsburgh: Park Building. Boston: 425 Park Square Building. Philadelphia: 1402 Widener Building. Cleveland: 1362 Hanna

Building, Detroit; 7338 Woodward Ave. Cincinnati: First National Bank Building. Buffalo: 835 Ellicott Square. Washington: 536 Investment Building. San Francisco: 320 Market St.
Subscription Price. United States and Possessions, Mexico, Cuba, \$6.00; Canada, \$8.50; Foreign, \$12.00 per year.
Single Copy 25 cents.

Entered as second-class matter, June 18, 1879, at the Post Office at New York, N. Y., under the Act of March 3, 1879.
PRINTED IN U. S. A.

Mr. Babson's Delphic Oracle

ROGER BABSON of Boston is a well-known publicist who has successfully capitalized the theorem that action and reaction are equal. The "Babsonchart" is now 12 per cent above normal, wherefore there must be an equalization; and "a distinct recession in business and possibly a panic within two or three years would not be surprising." So Mr. Babson said to those attending his thirteenth national business conference. Mr. Babson has an extensive following and some alarm has been raised among it by his latest prophecy. Remembrances of 1907 and 1914 produce shivers at the very suggestion of "panic."

Mr. Babson was not very convincing, however, and we can not avoid the feeling that he was doing the theatrical. The recession in business would be merely temporary, he added, which weakened his intimation of panic, for the consequences of panics are seldom only temporary; and it may not come for two or three years. In the meanwhile the outlook is for prosperity, he said. This is well-hedged opinion; oracularly it is Delphic. The speculator wavering between two minds, whether to ride further with his stocks or to sell them and go short, might as well toss a penny and abide by its fall.

Mr. Babson's discernment of clouds is still less convincing. They are installment buying, the foreign situation, and the excess of domestic manufacturing capacity. Readers of THE IRON AGE did not need to go to Wellesley Hills for instruction in respect to these subjects. Extensive installment buying is not necessarily a menace. Except in Great Britain the foreign situation is distinctly improving. The excess of manufacturing capacity, which was a great threat seven years ago, is gradually being absorbed.

We can mention more serious menaces than any of Mr. Babson's. They are our unbalance in the division of the produce of industry, reflected in the agrarian discontent and the migration of labor from the farms to the towns; the restriction of opportunities to work, keeping the costs of building and other things too high; the foreign competition that is pressing against our high-cost structure; the increasing scale of expenditure for luxuries and the lessening esteem of thrift. Those are real

clouds. Some day they, with others, may gather into a storm. This may be one year, three years, or five years hence. Who knows? We think that the change of weather will come when we have to shift from the extravagant enjoyment of consumers' goods to thrift and saving for creation of more capital goods. As once previously we remarked, the disappearance of excessive manufacturing capacity will be one of the signs of such a change.

Prices and Volume

CONTINUING decline is seen in the Bureau of Labor's index number of commodity prices at wholesale. For August it was 149.2, against 150.7 for July. The August number is the lowest in 23 months, since 148.8 was announced for September, 1924.

This downward trend has been considered an unfavorable feature of the business situation, and since the statistics have been showing a growing volume of business there is quite prevalent a deduction that the larger volume is "at the expense of prices."

There is no ground for arguing that such a deduction is unreasonable when a sudden movement is involved, but when there is such a long-range movement, when the changes are so gradual, the case is different, for two general principles are certain to operate at long range, involving declining prices and increasing volume.

Improvement in appliances and methods is natural and normal and, with other things equal, leads to lower costs and therefore lower selling prices. The course is disturbed only by special influences, such as failing supplies of raw materials, inefficiency of labor or troubles of one sort or another.

With the same money turnover and with all other things equal, declining prices would involve increases in the physical volume of business; but one item always does increase—the population. A small increase in volume can occur without any apparent increase in activity.

It would require much closer scrutiny of the statistics of prices and volume than business men ordinarily make to determine whether the declines in prices and increases in volume are larger or

smaller than should be expected from the normal and long-range trends.

What really should be considered the impressive thing is not these small fluctuations, but the general steadiness. The common attitude is that of dismissing this as a feature of "the times we live in"; but all that really can be said is that it is a matter of the times we have been living in recently and up to date. There is no good warrant for carrying the period forward. If we do, for how many months or years should we carry it forward?

At any moment there is an equilibrium, necessarily so. The opposing influences meet in the market. The fact that the point of equilibrium does not change much does not prove that the opposing forces are not strong. They may be very strong and it may be easy for one or the other to weaken enough to move the equilibrium point quite sharply.

In steel, for instance, in the old days there used to be alternations of a "sellers' market" and a "buyers' market." Of late there has been a combination of very heavy demand and very strenuous competition for orders.

In the matter of volume, steel has been making numerous rather than important records. This year shows quite a jump in tonnage from last year, but comparisons with 1923, 1920, the war period, or times still farther back do not bring out gains commensurate with the elapsed time according to any of the old standards of steel growth. Probably some other industries are envious of steel. They would not be if the circumstances were more thoroughly studied.

Economizing by Coking Coal

WITH the rapid swing from beehive coking to by-product coking there has been substantial progress in economical use of bituminous coal, but in economizing by way of wider use of coke little progress has been made. We still use coke chiefly for metallurgical purposes where its use is practically imperative.

The progress in coking by the use of one process in place of the other has been marked. The report of coke production for August showed 3,749,000 net tons of by-product coke and only 752,000 tons of beehive, making a total of 4,501,000 tons. The proportion of beehive was only 16.7 per cent. Twenty years ago, in 1906, the proportion of beehive was 87.5 per cent. Production of coke in that year was 67.5 per cent of the rate just shown for August. Thus there has been an increase in coke production of about 48 per cent, whereas the production of bituminous coal, by the same method of estimating, has increased 62 per cent.

Comparing by a different route, the Bureau of Mines estimates that coal consumed in all coking in August was 6,574,000 net tons, while total production of bituminous coal is put at 46,347,000 tons. For 1906 the quantity of coal coked, on the basis of 1½ tons, was 15.9 per cent of the total coal produced. For last August the proportion seems to have been 14.2 per cent. Thus there is an apparent decrease, though some allowance should be made for the extra export movement of coal in recent months due to the British coal strike.

It is quite clear, at any rate, that there has been no increase in 20 years in the proportion of our

bituminous coal production that is put through the coking process. There has been much talk to the effect that we ought, as a matter of economy and efficiency, to coke nearly all of our bituminous coal, but we do not seem to be making any actual progress at the present time.

As to by-product coke, there are definite figures for recent years, showing the proportion made by ovens associated with blast furnace plants and by other ovens. For August the proportions were 83.2 per cent by the furnace ovens and 16.8 per cent by all other ovens, and there has been no material variation in the proportion in recent years. A considerable part of the "all other" production finds its way into metallurgical use. The entire production of the "all other" in August was at a rate of only 7,500,000 tons a year, which compares with a normal production of anthracite of about 90,000,000 tons.

It is quite true that much capital is required for by-product coking, but the markets for coke and gas are quite promising in the matter of steadiness, and it will be strange if we do not in future see more progress in the matter of by-product coking for the public.

Up-Trend in American Wages

A CHART of the National Industrial Conference Board shows the course of average hourly wages in manufacturing, railroading, anthracite mining and building in the United States. Three of these occupations may be properly characterized as numerically major. Railroading requires the services of something like two million persons, building three million, while manufacturing occupies approximately ten million.

Anthracite mining, although it is an industry of immense importance, employs relatively few men. It is interesting, however, as being perhaps the most perfect example of unionization. Railroading is also a highly unionized occupation, but since the shopmen's strike of a few years ago not to the same extent as formerly. Building is highly unionized in some regions, but is open in others. Manufacturing is the least extensively unionized.

In respect to requisite skill but little discrimination is to be made as to mining, manufacturing, and railroading. It must be remarked that the last classification is occupational rather than industrial, and that its personnel comprises trainmen, shopmen, and others who have very different functions. Labor leaders put much emphasis on the skilfulness of coal miners and the great hazards to which they are exposed; but mining engineers disagree as to both those particulars. Every one will agree, however, that the building mechanics—as carpenters, bricklayers, pipe fitters, electricians—must possess a higher order of skill than is necessary in either of the other three occupations above, generically speaking.

This was fairly measured by the wage rates of 1914, when the miners, railroad men and factory workers were each averaging about 25 cents per hour, while the builders were making 50 cents. Let us see what has happened since then. Up to the end of 1920 all wages rose on substantially parallel lines. During the depression of 1921-2 all wages declined, except for the anthracite miners

who held their previous level. In 1923 the wages for builders and miners started upward again, continuing their rise to the end of 1925. The wages of factory workers regained a portion of their loss during the depression and since then have run level. The wages of the railroad men have been substantially on a level since 1921. At the end of 1925 building wages were 109 cents per hour, anthracite mining 86 cents, railroading 61 cents, and manufacturing 56 cents.

This exhibition affords no ground for the belief that increased wages have been a reflection of increased production. It is certain that the hours of labor required per thousand square feet or cubic feet of building have not been diminished during the last five years sufficiently to give the building mechanics the increase of wages that they have enjoyed. The probability is that the quantitative quotient has diminished rather than increased. It is equally certain that improvements in anthracite mining have not justified the wage increase in that industry. In respect to both the explanation is rather to be found in the curtailment of labor supply by artificial restrictions.

In manufacturing and railroading the wage rates have been but a little below the peaks of 1920. Any improvements in those great industries have accrued to capital, giving it merely a chance to live. The railroads, for example, have only recently become prosperous. Their labor is even now claiming more for its share. Manufacturing is prosperous in some branches; not so in others.

In all of these great industries, however, the rise in wages has been in greater proportion than the rise in general price level, which for the last three years has been about 1.8 as compared with 1913. All of these workers, therefore, have profited at the expense of other workers, particularly the farmers, whose income has not increased so much as the advance in the general price level.

One City's Freight Survey

FREIGHT movement over the country is accepted as a standard index of the nation's business. Similarly the volume of outbound freight of a manufacturing community affords a measure of business conditions, as has been demonstrated in a painstaking survey conducted at Worcester, Mass.

Considerably over 90 per cent of outbound freight, this survey shows, is made up of the products of the city's mills, shops and factories. Incoming freight was left out of consideration, as including not only raw materials for industries, but foodstuffs, coal, building materials and the like. The index established is that of outgoing freight exclusively, measured in tons instead of carloadings. The figures obtained for the first eight months of 1926, comparing them with those of 1924 and 1925, are significant. Worcester is a city of diversified industries. For the most part their shipments are equipment or materials for other industries, a relatively small amount going to merchants or ultimate consumers. Therefore the city's industrial activities are a gage of activity in a widely extended field.

Worcester has the works of the American Steel & Wire Co., Wickwire-Spencer Steel Co. and other

manufacturers of wire specialties, together with large factories for the manufacture of wire goods. Its production of textile machinery reaches many millions of dollars a year. There are important establishments for the building of rolling mill machinery, machine tools, paper machinery and special machinery of many kinds. In the automobile field there are great tonnages of crankshafts and other automobile parts and accessories. Other production lines are railroad cars, abrasive wheels and materials, shoes, carpets, textile fabrics, envelopes, screws, pressed and stamped metal, electrical specialties, leather belting, wall paper, small tools.

In the first eight months of 1926 the total tonnage shipped was 295,454, as compared with 254,168 in 1925 and 236,346 in 1924. The gain over last year was 16 per cent. The total for the first quarter of 1924 was 97,175 tons; of 1925, 83,071 tons, and of 1926, 117,466 tons. In the second quarters 1925 went far ahead of 1924, and 1926 did better still. The totals were 86,926 tons in 1924, 100,105 tons in 1925, and 110,971 in 1926.

The two summer months, however, saw 1926 fall behind last year. The loss came entirely in July, perhaps because of the unusual number of plant shutdowns for vacations and other reasons. August got back into the running, and topped 1925 by a small margin. The totals for the first two months of the third quarter of the year were 52,245 tons in 1924, 70,992 tons in 1925, and 67,017 tons in 1926.

CORRESPONDENCE

Says Molding Machine is Not on Production Basis

To the Editor:—In June, 1926, the Foundries Service Corporation placed a machine in our foundry known as "Woods-Process No. 350," equipped for making ash pits for hot water supply boilers.

In the issue of THE IRON AGE of Sept. 2, page 604, an article appeared stating that the Boynton Furnace Co. was making ash pits on a record production basis with the aid of Woods-process machine. The data for this article were not furnished by the Boynton Furnace Co.

The fact is the machine is still in the experimental stage only.

W. RITCHIE,
Vice-president Boynton Furnace Co.

Welded Joints Searched by X-Rays

To the Editor:—In a recent article entitled "Welded Joints Searched by X-rays" published in THE IRON AGE, Aug. 12, several radiographs of welded joints were shown indicating more or less serious defects. In order that the purchaser of welded structures should not be left with the idea that such defects are common, the author wishes to state that many of these samples were deliberately made defective for the purpose of these experiments. The sole object of the investigation was to point out what X-rays would and would not show concerning the existence of defects in welded joints, and was not in any way intended to be a criticism of present-day welding methods nor an indication of the soundness of welded structures as ordinarily constructed.

J. T. NORTON.
Massachusetts Institute of Technology,
Cambridge, Sept. 15.

STEEL TREATERS MEETING

Chicago Convention and Exposition Given Auspicious Start

CHICAGO, Sept. 21.—Metallurgists and other steel men from all parts of the country are assembled in large numbers in Chicago to attend the eighth annual convention and exposition of the American Society for Steel Treating. The affair is a complete success and easily surpasses any previous one. The technical sessions, two each day, at the Drake Hotel, are being well attended. The one devoted to steel melting, the second one the society has attempted, was a feature this morning, with papers on basic open-hearth practice, desulphurization and hair cracks in rails.

Imposing and comprehensive is the steel and machine tool exposition occupying the entire length of the Municipal Pier, some distance from the headquarters at the Drake Hotel. The 85,000 sq. ft. of booths was practically ready when the exhibition opened Monday noon. The feature is the very large display of machine and other tools, the total being twice that at Cleveland in September last year. The

convention this year is in part an anniversary. Seven years ago in Chicago the first convention and exhibition of what ultimately became the present organization was held.

Officers Nominated

The nomination committee has selected J. Fletcher Harper, metallurgist Allis-Chalmers Mfg. Co., Milwaukee, and the present vice-president, as president and Frederick G. Hughes, vice-president New Departure Co., Bristol, Conn., one of the directors, as vice-president for the coming year.

The first E. D. Campbell memorial lecture will be delivered tomorrow morning by Dr. William M. Guertler, a distinguished German metallurgist of Charlottenburg, Germany. At the banquet Thursday evening E. H. Gary and Charles M. Schwab will be made honorary members.

H. Kenneth Briggs, formerly metallurgist with the Minnesota Electric Steel Casting Co., Minneapolis, has been made assistant secretary, entering on his duties this week.

An enthusiastic meeting of the production division of the Society of Automotive Engineers is being held at the Sherman Hotel.

TRAINING FOR THE FOUNDRY

Pittsburgh Foundries Establish with Schools Cooperative Arrangement of Apprentices

Pittsburgh foundrymen, with the opening of the new school year, inaugurated formally the training of apprentices, or, as it has been termed, "the creation of labor." About a year ago a committee was selected from the membership of the Pittsburgh Foundrymen's Association to investigate apprenticeship plans of other cities and industries, and given full power to formulate and establish a system for the Pittsburgh foundries.

The plan worked out by this committee, and which has been applied in cooperation with the Pittsburgh Board of Education at the Ralston School, Fifteenth Street and Penn Avenue, Pittsburgh, in a general way differs little from that which has been in use in Milwaukee for several years, or from those more recently applied in Indianapolis and Chicago.

The lesson material has all been prepared and copyrighted. It covers mathematics, drawing, foundry technology and industrial economics. In mathematics the material embraces fractions, decimals, percentage, factoring, weights and measures, surface measuring, volume and capacity, ratios and proportions, surface and solid mensuration and pattern problems. The drawing lessons are designed primarily to fit the requirements of the foundry, but with the broad object of preparing the apprentice to read blue prints quickly and accurately in keeping with approved foundry practice, and definitely to tie them in with the instructions in mathematics and foundry technology.

The latter subject does not necessarily mean physics, chemistry or metallurgy, but rather lessons to give the apprentice an understanding of the scientific principles of foundry work, expressed in the language of the foundry. Similarly, the class-room instruction in industrial economics has been prepared with the chief thought of furnishing the apprentice with a better understanding of foundry procedure and to direct him into channels of consecutive thinking and action.

The test of the instructional material that the committee has applied before its adoption and, incidentally, its slogan has been: "Will it render the doing of foundry work easier, cheaper or more interesting"? Whether the apprentice receives his classroom instruction in the public schools or in those maintained by the companies themselves, the lesson material and the course of training will be the same. Four hours weekly is the minimum time to be given to classroom work.

Companies subscribing to the plan have agreed to train at least two apprentices at one time in the essentials of foundry work and to pay them for the actual

hours of work, with an increase at definite periods. The individual companies reserve the right to pay more than the stated increase, and prior to the stated time, if the apprentice shows an aptitude that warrants it. The boy that is interested and disposed to do more than is expected is not obliged to drag along with those less inclined to work and study. The course is a four-year one, with half of the time in school. Two boys constitute a set, and an alternating schedule provides that one shall attend school for two weeks while the other works. Both boys are on the payroll, but are paid only when at work.

The training plan has been worked out under the direction of William K. Frank, Damascus Bronze Co., and president of the Pittsburgh Foundrymen's Association, with C. D. Carey, Verona Steel Castings Co., Verona, Pa., general chairman of the committee, which includes D. J. Evans, Union Steel Casting Co., Pittsburgh; A. D. Hartman, United Engineering & Foundry Co., Pittsburgh; R. V. Jones, Union Switch & Signal Co., Swissvale, Pa.; L. V. Stevens, Locomotive Stoker Co., Pittsburgh; L. W. Mesta, Mesta Machine Co., West Homestead, Pa.; W. E. Trautman, Duquesne Steel Foundry Co., Coraopolis, Pa.; James S. Jones, Pittsburgh Valve, Foundry, & Construction Co., Pittsburgh; E. S. McClelland, Westinghouse Electric & Mfg. Co., Trafford, Pa.; J. R. Berg, Mesta Machine Co.; F. N. Leavitt, Pittsburgh Board of Education; R. A. Peebles, Mesta Machine Co.; J. R. Steele, Union Steel Casting Co.; C. B. Connelley, Carnegie Institute of Technology; L. E. Osborne, Locomotive Stoker Co.; C. J. Niedringhaus, Mesta Machine Co.; G. W. Friesel, United Engineering & Foundry Co.; Henry Spilker, Sterrit Thomas Foundry Co., Pittsburgh, and W. J. Brant, secretary, Pittsburgh Foundrymen's Association.

July shipments of domestic pump and water systems are reported by the Department of Commerce at 7920 units, valued at \$622,961, compared with 8318 units in June, valued at \$679,263. Except for June, the July figure was the largest of the year. Output for May, June and July combined was greater than that for the four preceding months combined. Stocks at the end of July were 4320 units, the smallest for any month of the year, so far.

A complete set of wrenches for general repair work is announced by the Bonney Forge & Tool Works, Allentown, Pa. It is known as set No. 650, and consists of thirty high-grade carbon-steel wrenches, in a wide range of sizes and types. Included in the assortment are double-end engineers' wrenches for U.S.S., S.A.E. nuts and cap screws and valve-tappet wrenches.

Iron and Steel Markets

Railroad Buying Has Set In

Car Orders More Than in Several Weeks—Rail Business Coming Out—Sheet Sales Exceed Shipments—Coke Has Advanced

NEW orders for finished steel and deliveries on those placed in the summer continue in fair balance, but forecasts for the fourth quarter show some divergence. Pittsburgh mills find indications that in a few lines operations in the fourth quarter will be somewhat less than in the three months now ending.

Considerable activity in fourth quarter contracts in plates, shapes and bars has developed in the past week, prices being in the main the same that have obtained since June. Specifying also has been stimulated by a Sept. 30 limitation on unspecified bars and shapes booked at 1.90c.

Almost uniformly producers put their operating rate at 85 per cent and they expect to carry it into October. Chicago outdoes other districts in reporting the past week's sales and specifications as the best since early August.

Thus far in September rail buying and rail inquiry for 1927 have been closely in line with what developed at this time a year ago, except that the Pennsylvania order is expected to be an early one this fall. Again it will be close to 200,000 tons, of which 40,000 tons is reported already placed for the lines west of Pittsburgh.

Chicago mills report definite rail inquiries this week for 220,000 tons and look for as much more in the next few days. The C. & O. will buy 54,000 tons of rails and 8000 tons of track supplies. An L. & N. inquiry is for 8000 kegs of bolts, 18,000 kegs of spikes and 6000 tons of angle bars.

Buying of rolling stock is starting just as the books of the car shops are nearly bare. The American Refrigerator Transit Co. has placed 2000 cars and the week's total is 2600 cars and 41 locomotives. For the Chicago & North Western \$12,000,000 worth of equipment has been authorized including 2450 freight cars.

For fourth quarter delivery the Pennsylvania Railroad's inquiry for plates, shapes and bars is of good size—22,000 tons—and it has just bought 3000 tons of fabricated car parts.

Included in 34,000 tons of structural steel newly inquired for is 9600 tons for subway construction in New York. Pipe lines for Ellensburg, Wash., and Los Angeles, Cal., will take 6000 and 7250 tons, respectively, on which bids will be requested soon.

Fabricated structural steel bookings in August, 250,100 tons, were the largest since last October. Those of August, 1925, were 238,000 tons. Sales so far this year are only 30,000 tons short of the 1,750,000 tons for the eight months of 1925.

Sheet sales have topped shipments for three successive months. Independent manufacturers produced 801,900 tons in June, July and August and shipments were 807,900 tons, while sales amounted to 919,400 tons. For the eight months of this year shipments have run 37,000 tons per month ahead of the same period of 1925.

Sheet mills are now producing at 85 to 90 per cent of capacity and seem likely to exceed this year their high record of 1925.

Some sheet manufacturers are asking \$2 a ton advance, or 3.10c. for No. 24 black and 3.95c. for galvanized.

In standard weight steel pipe demand is well below the mid-summer volume, though quite satisfactory in pipe for oil and gas wells. There is doubt as to the full employment of all the seamless tube capacity that is coming forward.

Not all indices of August business show gain. Production of steel barrels, 511,542, was less than in July and June. Shipments likewise were lower. Lessened power plant construction appears in a falling off of mechanical stoker business as compared with July and June, though better than in August last year.

In keeping with a stronger coal market, coke prices have advanced again, and for merchant blast furnaces there is a prospect of higher fuel costs in the fourth quarter. Producers have taken a firmer stand at Pittsburgh, where Bessemer iron has been sold at an advance. At Cleveland prices of foundry and malleable irons for local delivery have gone up 50c. a ton. On the Eastern seaboard, water shipments of pig iron are an increasingly important factor in market calculations. A New England furnace has booked 1500 tons for barge delivery to the Philadelphia district and has also taken business for shipment to Brooklyn.

More use of water transportation appears also for scrap shipments. A Buffalo mill has purchased 45,000 tons of heavy melting steel and compressed sheets at Detroit for delivery by Lake boat. Scrap prices are weaker in most markets. At Pittsburgh heavy melting steel has declined 50c. and at Chicago 25c. a ton.

Pig tin, in selling at 71c. and 71.12½c. per lb. within the past week, has reached the highest price since the war. Demand of the tin plate industry and increasing use of tin in bearing metals for the automobile industry contribute largely to the active market.

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics
At Date, One Week, One Month, and One Year Previous

For Early Delivery

Pig Iron, Per Gross Ton:	Sept. 21, 1926	Sept. 14, 1926	Aug. 24, 1926	Sept. 22, 1925
No. 2 fdry., Philadelphia	\$21.76	\$21.76	\$21.76	\$21.76
No. 2, Valley furnace	17.50	17.50	17.50	19.00
No. 2, Southern, Cin'ti.	24.19	24.19	24.19	23.05
No. 2 Birmingham	21.00	21.00	21.00	18.50
No. 2 foundry, Chicago*	21.00	21.00	21.00	21.50
Basic, del'd, eastern Pa.	20.75	20.75	21.00	21.00
Basic, Valley furnace	17.50	17.50	17.50	18.50
Valley Bessemer del'd P'gh	20.26	19.76	19.76	21.26
Malleable, Chicago*	21.00	21.00	21.00	21.50
Malleable, Valley	17.50	17.50	17.50	19.00
Gray forge, Pittsburgh	18.76	18.76	18.76	20.26
L. S. charconl, Chicago	29.04	29.04	29.04	29.04
Ferromanganese, furnace	88.00	88.00	88.00	115.00

Rails, Billets, etc., Per Gross Ton:	Sept. 21, 1926	Sept. 14, 1926	Aug. 24, 1926	Sept. 22, 1925
O-h. rails, heavy, at mill	\$43.00	\$43.00	\$43.00	\$42.00
Light rails at mill	33.00	33.00	34.00	36.96
Bess. billets, Pittsburgh	35.00	35.00	35.00	35.00
O-h. billets, Pittsburgh	25.00	25.00	25.00	25.00
O-h. sheet bars, P'gh	36.00	36.00	36.00	35.00
Forging billets, base, P'gh	40.00	40.00	40.00	40.00
O-h. billets, Phila.	40.20	40.20	40.30	40.20
Wire rods, Pittsburgh	45.00	45.00	45.00	45.00
Cents	Cents	Cents	Cents	Cents
Skelp, gr. steel, P'gh, lb.	1.90	1.90	1.90	1.90

Finished Iron and Steel,

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia	2.22	2.22	2.22	2.12
Iron bars, Chicago	2.00	2.00	2.00	1.90
Steel bars, Pittsburgh	2.00	2.00	2.00	1.90
Steel bars, Chicago	2.10	2.10	2.10	2.10
Steel bars, New York	2.34	2.34	2.34	2.24
Tank plates, Pittsburgh	1.90	1.90	1.90	1.80
Tank plates, Chicago	2.10	2.10	2.10	2.10
Tank plates, New York	2.24	2.24	2.24	2.09
Beams, Pittsburgh	2.00	2.00	2.00	1.90
Beams, Chicago	2.10	2.10	2.10	2.10
Beams, New York	2.34	2.34	2.34	2.24
Steel hoops, Pittsburgh	2.50	2.50	2.50	2.40

*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market reports on other pages.

Pittsburgh

Independents Advance Sheets \$2 a Ton— Pig Iron Stronger—Scrap Weaker

PITTSBURGH, Sept. 21.—The third quarter of the year is coming to a close with no diminution in the rate of ingot production from that reached late in August, output in this and nearby districts still averaging 85 per cent of capacity. Incoming business, however, is not equaling shipments, and the prospect is for a lower fourth quarter engagement of steel-making and rolling capacity. With the steel manufacturers and steel consumers disposed to think and act on a basis of 30-day requirements, there is more than the usual danger in making an extended forecast, but the final quarter of the year rarely sees as heavy consumption of steel as the second and third quarters.

The mills are still well supplied with business in sheets and pipe, but there are no appreciable additions to their obligations in structural steel or plates, while this month's gain in orders for automobile steel has been easily met by increasing mill schedules. The requirements of can makers for those sizes of tin plate required for food containers has been supplied to a very large extent, and the recession in mill operations, which usually comes earlier in the year, seems to be just ahead. The outlook for the next three months would be materially brightened by a railroad car buying movement.

Price developments of the week have to do chiefly with sheets and steel bars. In sheets, several manu-

Sheets, Nails and Wire.

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Sheets, black, No. 24, P'gh	3.00	3.00	2.95	3.00
Sheets, black, No. 24, Chi- cago dist. mill	3.10	3.10	3.10	3.15
Sheets, galv., No. 24, Chi- cago dist. mill	3.85	3.85	3.80	3.75
Sheets, galv., No. 24, Chi- cago dist. mill	3.95	3.95	3.95	3.90
Sheets, blue, 9 & 10, P'gh	2.30	2.30	2.30	2.35
Sheets, blue, 9 & 10, Chi- cago dist. mill	2.40	2.40	2.40	2.40
Wire nails, Pittsburgh	2.65	2.65	2.65	2.65
Wire nails, Chicago dist. mill	2.70	2.70	2.70	2.70
Plain wire, Pittsburgh	2.50	2.50	2.50	2.50
Plain wire, Chicago dist. mill	2.55	2.55	2.55	2.55
Barbed wire, galv., P'gh	3.35	3.35	3.35	3.35
Barbed wire, galv., Chi- cago dist. mill	3.40	3.40	3.40	3.40
Tin plate, 100 lb. box, P'gh	\$5.50	\$5.50	\$5.50	\$5.50

Old Material, Per Gross Ton:

Carwheels, Chicago	\$15.25	\$15.25	\$16.00	\$17.50
Carwheels, Philadelphia	17.50	17.50	18.50	
Heavy melting steel, P'gh	17.50	18.00	17.50	18.50
Heavy melting steel, Phila.	17.00	17.00	16.50	17.00
Heavy melting steel, Ch'go	14.25	14.25	14.00	16.00
No. 1 cast, Pittsburgh	16.25	16.50	17.00	17.50
No. 1 cast, Philadelphia	18.00	18.00	18.00	18.00
No. 1 cast, Ch'go (net ton)	17.00	17.00	17.00	17.75
No. 1 RR. wrot., Phila.	17.50	17.50	18.00	18.00
No. 1 RR. wrot. Ch'go (net)	13.50	13.50	13.50	14.75

Coke, Connellsville, Per Net Ton at Oven:

Furnace coke, prompt	\$3.50	\$3.25	\$3.00	\$2.75
Foundry coke, prompt	4.50	4.25	4.00	4.25

Metals,

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York	14.50	14.50	14.50	14.87 1/2
Electrolytic copper, refinery	14.05	14.07 1/2	14.12 1/2	14.50
Zinc, St. Louis	7.45	7.47 1/2	7.40	7.85
Zinc, New York	7.80	7.82 1/2	7.80	8.20
Lead, St. Louis	8.50	8.50	8.75	9.25
Lead, New York	8.75	8.75	8.90	9.55
Tin (Straits), New York	68.87 1/2	68.87 1/2	65.00	58.50
Antimony (Asiatic), N. Y.	15.50	16.25	16.00	17.00

facturers have made another advance of \$2 a ton in black and galvanized and also have raised prices of blue annealed by a like amount. This action, which finds its explanation in the fact that the new base gages and gage differentials will not produce quite as high an average price as did the old card, has not yet been followed by the leading producer. Most of the makers of steel bars have formally opened their books for fourth quarter business, and a number of contracts have been signed, usually embracing less than 500 tons, at 2c., base, Pittsburgh. There has been some extension of third quarter contracts into the fourth quarter. For single carloads, especially when the inquiry calls for a number of sizes, 2.10c., base, is still quoted, but the ordinary tonnage price is still 2c., base, Pittsburgh.

The pig iron market is stronger and actually higher on Bessemer. As much as \$19, Valley furnace, was paid in the past week on 1000 tons of this grade, and while the buyer possibly paid a premium of about 50c. a ton to secure a particular brand, it is apparent that the iron was not available at the recent price of \$18. The stronger pig iron market is rather definitely tied up with the course of the coke market, which has strengthened further since a week ago. Having a possible bearing on the pig iron market, however, is the fact that comparatively few blast furnaces now in production are unprotected against their requirements for the last quarter of the year. Steel works grades of scrap have again declined 50c. a ton, and this is a factor in the pig iron situation since it may mean use of more scrap and less pig iron by the steel companies.

Pig Iron.—The market here seems to be shaping

itself for an advance and actually is quotably higher on Bessemer grade, on which the recent quotation of \$18, Valley furnace, has definitely disappeared. The fact that one producer was able to sell 1000 tons for October and November shipment at \$19, Valley furnace, would hardly be possible if the iron could be had \$1 per ton less. It is doubtful if any of the merchant iron producers or steel companies today would sell foundry iron at as low as \$17.50 Valley furnace, for No. 2 grade, but as there has been no important business to test the market in the past week, higher prices must still be regarded as asking quotations. Recent inquiries for basic iron have not yet materialized into actual business. The inquiry for 10,000 tons of this grade appears to have been from the Andrews Steel Co., Newport, Ky., and does not interest Valley producers, since it would be necessary for them to go below \$17 furnace, to get the business. The National Malleable & Steel Castings Co. is still taking prices on 2000 to 3000 tons of basic iron for its Sharon, Pa., plant. A quotation of \$18.50, delivered, or \$18, at furnace, was not interesting.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh districts being \$1.76 per gross Ton:

Basic	\$17.50 to \$18.00
Bessemer	18.50 to 19.00
Gray forge	17.00 to 17.50
No. 2 foundry	17.50 to 18.00
No. 3 foundry	17.00 to 17.50
Malleable	17.50 to 18.50
Low phosphorus, copper free....	27.50

Ferroalloys.—Consumers of ferromanganese, ferrosilicon and spiegeleisen are specifying steadily against contracts, but there is little or no new business and no interest yet in supplies for next year. Prices are unchanged.

Fluorspar.—As most of the larger steel companies in this and nearby districts covered their requirements of gravel spar for the remainder of the year late last month, the market now is rather dull. The effort of domestic producers is to maintain a price of \$18 per net ton at mines for spar guaranteed to run 85 per cent calcium fluoride and not more than 5 per cent in silica, and for small lots that price has been paid. The fact that the market went as low as \$17 on some sizable lots, however, makes it hard to convince some buyers with a few hundred tons to place that they should pay more. Domestic material has had real competition in this territory from imported fluorspar, because of the low delivered prices of the latter. The freight charge to the Pittsburgh district from domestic mines is \$5.25 per net ton, while the rate from Philadelphia, where most of the foreign spar is landed, runs from \$3.08 to \$3.66 per net ton.

Steel and Iron Bars.—Makers of steel bars have opened their books for fourth quarter contracts, naming prices that were quoted late in the second quarter after considerable business had been entered for third quarter, or 2c., base, Pittsburgh, for fair-sized lots and 2.10c. for carloads. So far the contracts written for the final quarter of the year are fewer than those

entered for the third quarter, and most of them are for lots of less than 500 tons, with 2c. the common price. Specifications on unshipped third quarter tonnages are fairly heavy, but it is necessary for the mills to press harder for shipping instructions. There is no change in iron bars either as regards prices or demand.

Structural Steel.—On fourth quarter tonnages the mills are making a strong effort to establish 2c., base, Pittsburgh, as the large-lot price for structural shapes. There is some resistance on the part of the steel fabricators, and with fabricated steel business growing lighter, some tendency to defer action on fourth quarter tonnages is noted. Mills are pressing for specifications against old orders.

Semi-Finished Steel.—A movement is on foot to establish definite extras on billets and slabs for size and analysis, which would materially increase costs to strip makers, who constitute the principal commercial outlet for steel in these forms. Producers have long contended that they have been selling steel of forging quality at the commercial quality price, and they seek prices which will cover the higher costs. There is resistance to the move, as might be expected in view of the fact that there does not seem to be much possibility of advancing hot-rolled strips, while the market in cold-rolled strips is still weak and unsettled.

Wire Products.—Nails and wire are still in very steady demand, and shipments by local producers for the month to date are running somewhat larger than in the same period last month, which, in turn, made a better showing than the month before. Not much fence is being sold by local mills, and they do not get nearly as much business in barbed wire as they did prior to the passing of Pittsburgh as a sole basing point.

Rails and Track Supplies.—All makers now are quoting \$36 per gross ton, Pittsburgh, for light billet rails, but as yet that appears to be more of a quotation than a sales price, as a good many users were given a chance to cover against their immediate requirements before the advance.

Tubular Goods.—Business in standard-weight butt-welded pipe has decreased considerably from its volume of 60 days ago, but there has been no material decrease in orders for oil country pipe, welded or seamless. The mills are well supplied with line pipe business, and there is more in sight. The Sinclair Pipe Line Co. is reported to be negotiating for 190 miles of 6-in. and 8-in. pipe for a line in Kansas. Oil production statistics are favorable to continued drilling operations, but it is nevertheless probable that there will be some letdown later in the year in both orders and shipments, because of the difficulty in the winter of getting pipe to the operations, even in the more southerly fields. Pipe prices are holding well for standard-weight and oil well pipe, but those for line pipe are not much closer to regular market quotations than usual. It is suggested that the increase in seamless pipe producing capacity

THE IRON AGE Composite Prices

Finished Steel

Sept. 21, 1926, 2.439c. Per Lb.

One week ago.....	2.439c.
One month ago.....	2.431c.
One year ago.....	2.396c.
10-year pre-war average.....	1.689c.

Based on prices of steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets. These products constitute 87 per cent of the United States output of finished steel.

High	Low
1926 2.453c., Jan. 5:	2.403c., May 18
1925 2.560c., Jan. 6:	2.396c., Aug. 18
1924 2.789c., Jan. 15:	2.460c., Oct. 14
1923 2.824c., April 24:	2.446c., Jan. 2

Pig Iron

Sept. 21, 1926, \$19.46 Per Gross Ton

One week ago.....	\$19.46
One month ago.....	19.46
One year ago.....	19.54
10-year pre-war average.....	15.72

Based on average of basic iron at Valley furnace and foundry irons at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

High Low

1926 \$21.54, Jan. 5:	\$19.46, July 18
1925 22.50, Jan. 13:	18.96, July 1
1924 22.88, Feb. 26:	19.21, Nov. 3
1923 30.86, March 20:	20.77, Nov. 20

Mill Prices of Finished Iron and Steel Products

Iron and Steel Bars

Soft Steel

Base Per Lb.

F.o.b. Pittsburgh mills.....	2.00c. to 2.10c.
F.o.b. Chicago.....	2.10c.
Del'd Philadelphia.....	2.22c.
Del'd New York.....	2.24c.
Del'd Cleveland.....	2.19c.
F.o.b. Birmingham.....	2.16c. to 2.25c.
C.i.f. Pacific ports.....	2.25c.
F.o.b. San Francisco mills.....	2.35c. to 2.40c.

Billet Steel Reinforcing

F.o.b. Pittsburgh mills.....	2.00c. to 2.10c.
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Rail Steel

Base Per Lb.

F.o.b. mill.....	1.80c. to 1.90c.
F.o.b. Chicago.....	2.00c.
Common iron, f.o.b. Chicago.....	2.00c.
Refined iron, f.o.b. P'gh mills.....	2.00c.
Common iron, del'd Philadelphia.....	2.22c.
Common iron, del'd New York.....	2.24c.

Tank Plates

Base Per Lb.

F.o.b. Pittsburgh mill.....	1.90c.
F.o.b. Chicago.....	2.10c.
F.o.b. Birmingham.....	2.05c. to 2.15c.
Del'd Cleveland.....	2.09c.
Del'd Philadelphia.....	2.22c.
Del'd New York.....	2.24c.
C.i.f. Pacific ports.....	2.30c.

Structural Shapes

Base Per Lb.

F.o.b. Pittsburgh mill.....	2.00c. to 2.10c.
F.o.b. Chicago.....	2.10c.
F.o.b. Birmingham.....	2.15c. to 2.25c.
Del'd Cleveland.....	2.19c.
Del'd Philadelphia.....	2.32c.
Del'd New York.....	2.34c.
C.i.f. Pacific ports.....	2.38c.

Hot-Rolled Flats (Hoops, Bands and Strips)

Base Per Lb.

All gages, narrower than 6 in., P'gh.....	2.50c.
All gages, 6 in. and wider, P'gh.....	2.30c.
All gages, 6 in. and narrower, Chicago.....	2.60c.
All gages, wider than 6 in., Chicago.....	2.50c.
Cotton ties, f.o.b. Atlantic ports, per bundle of 45 lb.....	2.22c.
Cotton ties, f.o.b. Gulf ports, per bundle of 45 lb.....	1.22c.

Cold-Finished Steel

Base Per Lb.

Bars, f.o.b. Pittsburgh mills.....	2.50c.
Bars, f.o.b. Chicago.....	2.50c.
Bars, Cleveland.....	2.55c.
Shafting, ground, f.o.b. mill.....	2.70c. to 3.00c.
Strips, f.o.b. Pittsburgh mills.....	3.50c. to 3.60c.
Strips, f.o.b. Cleveland mills.....	3.25c. to 3.50c.
Strips, delivered Chicago.....	3.80c. to 3.90c.
Strips, f.o.b. Worcester mills.....	3.75c.

*According to size.

Wire Products

(To jobbers in car lots, f.o.b. Pittsburgh and Cleveland)

Base per Keg

Wire nails.....	2.65
Galv'd nails, 1-in. and longer.....	4.65
Galv'd nails, shorter than 1-in.....	4.90
Galvanized staples.....	3.35
Polished staples.....	3.10
*Cement coated nails.....	2.65

*Subject to new card of extras dated Sept. 1, 1926.

Base Per 100 Lb.

Bright plain wire, No. 9 gage.....	22.50
Annealed fence wire.....	2.65
Spring wire.....	3.50
Galv'd wire, No. 9.....	3.10
Barbed wire, galv'd.....	3.25
Barbed wire, painted.....	3.10

Chicago district mill and delivered Chicago prices are \$1 per ton above the foregoing. Birmingham mill prices \$3 a ton higher; Worcester, Mass., mill \$3 a ton higher on production of that plant; Duluth, Minn., mill \$2 a ton higher; Anderson, Ind., \$1 higher.

Woven Wire Fence

Base to Retailers Per Net Ton

F.o.b. Pittsburgh.....	35.00
F.o.b. Cleveland.....	65.00
F.o.b. Anderson, Ind.....	66.00
F.o.b. Chicago district mills.....	67.00
F.o.b. Duluth.....	68.00
F.o.b. Birmingham.....	68.00

Sheets

Blue Annealed

Base Per Lb.

Nos. 9 and 10, f.o.b. Pittsburgh.....	2.30c. to 2.40c.
Nos. 9 and 10, f.o.b. Ch'go dist. mill.....	2.40c.
Nos. 9 and 10, del'd Philadelphia.....	2.62c.

Box Annealed, One Pass Cold Rolled	
No. 24, f.o.b. Pittsburgh.....	3.00c. to 3.10c.
No. 24, f.o.b. Ch'go dist. mill.....	3.10c.
No. 24, del'd Philadelphia.....	3.32c. to 3.42c.

Galvanized

No. 24, f.o.b. Pittsburgh.....	3.85c. to 3.95c.
No. 24, f.o.b. Chicago dist. mill.....	3.95c.
No. 24, del'd Philadelphia.....	4.17c. to 4.32c.

Tin Mill Black Plate

No. 28, f.o.b. Pittsburgh.....	3.15c. to 3.25c.
No. 28, f.o.b. Chicago dist. mill.....	3.25c.

Automobile Body Sheets

No. 20, f.o.b. Pittsburgh.....	4.25c.
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Long Ternes

No. 28, 8-lb. coating, f.o.b. mill.....	4.65c. to 4.75c.
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Tin Plate

(F.o.b. Morgantown or Pittsburgh)	Per Base Box
Standard cokes, f.o.b. P'gh district mills.....	15.50
Standard cokes, f.o.b. Gary and Elwood, Ind.....	5.00
8-lb. coating, 100 lb base.....	\$11.40
25-lb. coating I.C. 17.90	25-lb. coating I.C. 17.90
8-lb. coating I.C. 11.70	8-lb. coating I.C. 19.45
15-lb. coating I.C. 14.85	40-lb. coating I.C. 21.65

Alloy Steel Bars

(S.A.E. Series)

Base Per 100 Lb.

2100* (1/4% Nickel, 0.10% to 0.30% Carbon)	\$3.20 to \$8.25
2200 (3 1/2% Nickel)	4.40 to 4.50
2500 (5% Nickel)	5.50 to 5.55
3100 (Nickel Chromium)	3.40 to 3.50
3200 (Nickel Chromium)	5.00 to 5.25
3300 (Nickel Chromium)	7.00 to 7.25
3400 (Nickel Chromium)	6.25 to 6.50
5100 (Chromium Steel)	3.40 to 3.50
5200* (Chromium Steel)	7.00 to 7.50
6100 (Chrom. Vanadium bars)	4.20
6100 (Chrom. Vanadium spring steel)	8.90
9250 (Silicon Manganese spring steel)	3.20 to 3.25

Carbon Vanadium (0.45% to 0.55% Carbon, 0.15% Vanad.)	4.10 to 4.20
Nickel Chrome Vanadium (0.05 Nickel, 0.50 Chrom., 0.15 Vanad.)	4.30

Chromium Molybdenum bars (0.80% 1.10 Chrom., 0.25—0.40 Molyb.)	4.25 to 4.35
0.70 Chrom., 0.15—0.25 Molyb.)	3.40 to 3.50

Chromium Molybdenum spring steel (1—1.25 Chrom., 0.30—0.50 Molybdenum)	4.50 to 4.75
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Above prices are for hot-rolled steel bars, forging quality. The ordinary differential for cold-drawn bars is 10 lb. per lb. higher. For billets 4 x 4 to 10 x 10 in. the price for a gross ton is the net price for bars of the same analysis. For billets under 4 x 4 in. down to and including 2 1/2-in. squares, the price is \$5 a gross ton above the 4 x 4 billet price.

*Not S.A.E. specifications, but numbered by manufacturers to conform to S.A.E. system.

Track Equipment

(F.o.b. Mill)

Base Per 100 Lb.

Spikes, 1/2 in. and larger.....	\$2.80 to \$3.00
Spikes, 1/4 in. and smaller.....	2.90 to 3.25
Spikes, boat and barge.....	3.25
Track bolts, all sizes.....	3.00 to 4.50
Tie plates, steel.....	2.25 to 2.50
Angle bars.....	2.75

Welded Pipe

Base Discounts, f.o.b. Pittsburgh District and Lorain, Ohio, Mills

Butt Weld

Iron

Inches	Steel	Black Galv.	Inches	Iron	Black Galv.
1/2	48	19 1/2	1/2 to 1 1/2	+39	
5/8	51	25 1/2	2 1/2	26	11
3/4	56	32 1/2	3	28	11
7/8	60	38 1/2	4	30	14
1	64	45 1/2	5	32	14
1 1/8	69	50 1/2	6	34	14
1 1/4	71	52 1/2	7	35	14
1 1/2	77	57 1/2	8	36</	

may later make difficult the maintenance of prices of welded goods, because there is not now a sufficient market to absorb all the seamless casing and drill pipe that can be made and there is the natural inference that makers will seek other outlets. Discounts are given on page 877.

Sheets.—A number of independent mills since a week ago have announced a further advance of \$2 a ton in black, blue annealed and galvanized sheets and now are quoting 3.10c., base Pittsburgh, 2.40c. and 3.95c. respectively. This would mean 3.35c., Pittsburgh, for No. 28 gage black sheets, which compares with prices of 3.10c. and even less on a considerable amount of business now on their books, while 3.95c., base, on galvanized produces under the new gage differentials a price of 4.45c. for No. 28 gage, or \$4 a ton above the average of business booked just before the change in the base gages and extras. The American Sheet & Tin Plate Co. has adopted the change in the base gage on automobile body sheets, and all makers now are quoting No. 20 as the base gage with a base price of 4.25c. On full finished sheets there is now a general price of 4.25c., base (No. 24 gage) for "A" grade metal furniture sheets and 4.15c., base, for "B" grade. This class of material calls for an extra of \$1.15 per 100 lb. over the base for black sheets for the best grade and of \$1 per 100 lb. more on the second grade, while the base price of black sheets for this grade, as noted previously, is 3.10c. The American Sheet & Tin Plate Co. as yet has made no change in its prices for the ordinary finishes. Business is reported on the basis of the new card, but specifications against orders placed before the change in bases and gage differentials constitute the bulk of current business. Mill operations range from 85 to 90 per cent of capacity. Prices are given on page 877.

Tin Plate.—Pig tin has not been as high since the middle of 1919, and this fact may have some bearing on tin plate prices for 1927, unless there is a recession of substantial proportions in the next few months. At 70c. per lb., pig tin is 27½c. per lb. higher than when the present tin plate prices were first established in 1923. On a basis of 1½ lb. of tin to the base box, there is an indicated increase in producing costs of more than 41c., or about \$8 per net ton. Against that, sheet bars at \$36 per gross ton are about \$5 a ton cheaper than in 1923. There is still a high rate of tin mill engagement, but as orders for packers' can sizes are fairly well worked out, some recession is likely before early 1927 business begins to reach mill schedules.

Cold-Finished Steel Bars and Shafting.—The automobile industry, as a whole, is still running well, and as inventories have been kept down to a minimum for some time, the demand for screw stock bars is very constant. Prices hold well at 2.50c., base, Pittsburgh, for the ordinary tonnages.

Hot-Rolled Flats.—This month's business to date in strips is running well ahead of the same period last month, because of the smallness of stocks in the hands of the automotive industry and the fact that produc-

tion schedules of that industry still are high. Prices are steady.

Plates.—There is firm adherence to 1.90c., base Pittsburgh, on plates by mills in this and nearby district, and this seems to be the price whether the tonnage is large or small and whether it is for immediate shipment or for delivery over the remainder of the year.

Cold-Rolled Strips.—The market is quotable at 3.50c. to 3.60c., base, Pittsburgh, on strips going to special uses and of a quality calling for considerable care in manufacture. The commercial quality of strips moving in large tonnages is still selling at substantial recessions from that range. This month's business has run well ahead of that for the same period last month.

Bolts, Nuts and Rivets.—Buying is more notable for its constancy than its volume. Prices of bolts and nuts established two years ago are still holding. There is more observance of the quotation of \$2.60, base, per 100 lb. on large rivets than recently. Prices and discounts are given on page 879.

Coke and Coal.—The coke market still shows a strong tone, and in the past few days \$3.50 per net ton at oven has become the ruling price on spot tonnages of furnace grade. The coal market, which has been improving so far as demand is concerned for the past few weeks, lately has been improving in price, and with Connellsville coal now salable at a better price in raw form than as coke, there is no tendency to increase coke production. The large producers of coke are well obligated for the remainder of the year on either coal or coke, and some inquiries for fourth quarter tonnages have found producers rather uninterested. The Stewart Furnace Co. is figuring on lighting its furnace at Sharon, Pa., and has an inquiry out for 9000 tons a month for the last quarter. The Rogers Brown Iron Co., Buffalo, wants 12,000 tons a month for the last quarter, and the Chateaugay Ore & Iron Co., Standish, N. Y., is seeking its last quarter requirements, amounting to about 10,000 tons a month. Producers want a price for this coke equal to what can be realized on coal, and that means \$3.75 for the coke. Foundry coke is about 25c. a ton higher than a week ago. Prices are given on page 879.

Old Material.—The market continues to weaken on the open-hearth grades and does not show much strength in other directions. There is almost no consumer interest in heavy melting steel, and for No. 1 railroad steel, or its equivalent in industrial scrap, \$18 per ton is all that can be obtained and that for shipment to only one point in the district. Mill bids generally hover around \$17.50, and dealers short of the market no longer have to offer more than that to secure supplies. There are rather good-sized offerings from the East at \$17.50, delivered in this district, and the situation in outside consuming and producing districts generally is more favorable to shipments to the Pittsburgh district. The Baltimore & Ohio Railroad is taking bids until noon, Sept. 27, on 19,978 gross tons of scrap, including 4700 tons of miscellaneous rails and 2200 tons of No. 1 heavy melting steel.

We quote for delivery to consumers' yards in the Pittsburgh and other districts taking the Pittsburgh freight rate as follows:

Per Gross Ton

Heavy melting steel.....	\$17.50 to \$18.00
Scrap rails	17.00 to 17.50
No. 1 cast, cupola size.....	16.25 to 16.75
Compressed sheet steel.....	16.50
Bundled sheets, sides and ends.....	15.50
Railroad knuckles and couplers.....	19.00 to 19.50
Railroad coil and leaf springs.....	19.00 to 19.50
Low phosphorus blooms and billet ends.....	22.00 to 22.50
Low phosphorus mill plates.....	21.50 to 22.00
Low phosphorus, light grade.....	18.00 to 18.50
Low phosphorus punchings.....	19.00 to 19.50
Steel car axles.....	22.50 to 23.00
Cast iron wheels	16.50 to 17.00
Rolled steel wheels.....	19.00 to 19.50
Machine shop turnings.....	12.00 to 12.50
Short shoveling steel turnings.....	14.00 to 14.50
Sheet bar crops	18.00 to 19.00
Heavy steel axle turnings	15.50 to 16.00
Short mixed borings and turnings	13.00 to 13.50
Heavy breakable cast	16.00 to 16.50
Cast iron borings	13.00 to 13.50
No. 1 railroad wrought.....	13.50 to 14.00
No. 2 railroad wrought.....	17.50 to 18.00
Railroad or automobile malleable scrap	18.00 to 18.50

Warehouse Prices, f.o.b. Pittsburgh

	Base per Lb.
Tank plates	3.00c.
Structural shapes	3.00c.
Soft steel bars and small shapes	2.90c.
Reinforcing steel bars	2.90c.
Black sheets (No. 24 gage), 25 or more bundles	3.85c.
Galvanized sheets (No. 24 gage), 25 or more bundles	4.50c.
Blue annealed sheets (No. 10 gage), 25 or more sheets	3.40c.
Cold-finished shafting and screw stock—	
Rounds and hexagons	3.60c.
Squares and flats	4.10c.
Bands	3.50c.
Spikes, large	3.30c.
Small	3.80c. to 5.25c.
Boat	3.80c.
Bolts, track	4.90c.
Wire, black soft annealed, base per 100 lb.	\$3.00
Wire, galvanized soft, base per 100 lb.	3.00
Common wire nails, per keg	3.00
Cement coated nails	3.05

Semi-Finished Steel, Raw Materials, Bolts and Rivets

Mill Prices of Semi-Finished Steel F.o.b. Pittsburgh or Youngstown

Billets and Blooms

	Per Gross Ton
Rerolling, 4-in. and over.....	\$35.00
Rerolling, under 4-in. to and including 1 1/2-in.	36.00
Forging, ordinary.....	40.00
Forging, guaranteed.....	45.00

Sheet Bars

	Per Gross Ton
Open-hearth or Bessemer.....	\$36.00

Slabs

	Per Gross Ton
8 in. x 2 in. and larger.....	\$35.00
6 in. x 2 in. and smaller.....	36.00

Skelp

	Per Lb.
Grooved.....	1.90c.
Sheared.....	1.90c.
Universal.....	1.90c.

Wire Rods

	Per Gross Ton
*Common soft, base.....	\$45.00
Screw stock.....	25.00 per ton over base
Carbon 0.20% to 0.40%.....	3.00 per ton over base
Carbon 0.41% to 0.55%.....	5.00 per ton over base
Carbon 0.56% to 0.75%.....	7.50 per ton over base
Carbon over 0.75%.....	10.00 per ton over base
Acid.....	15.00 per ton over base

*Chicago mill base is \$46. Cleveland mill base, \$45.

Prices of Raw Materials

Ores

Lake Superior Ores, Delivered Lower Lake Ports

	Per Gross Ton
Old range Bessemer, 51.50% iron.....	\$4.55
Old range non-Bessemer, 51.50% iron.....	4.40
Mesabi Bessemer, 51.50% iron.....	4.40
Mesabi non-Bessemer, 51.50% iron.....	4.25
High phosphorus, 51.50% iron.....	4.15

Foreign Ore, c.i.f. Philadelphia or Baltimore

	Per Unit
Iron ore, low phos., copper free, 55 to 58%	
iron in dry Spanish or Algerian, 9.50c. to 10c.	
Iron ore, Swedish, average 66% iron.....	9.50c.
Manganese ore, washed, 51% manganese, from the Caucasus.....	40c. to 42c.
Manganese ore, high grade, nominal, 38c. to 44c.	
Tungsten ore, high grade, per unit, in 60% concentrates.....	\$11.75 to \$12.50

	Per Ton
Chrome ore, Indian basic, 48% Cr ₂ O ₃ , crude, c.i.f. Atlantic seaboard.....	\$22.50

	Per Lb.
Molybdenum ore, 85% concentrates of MoS ₂ , delivered.....	50c. to 55c.

Coke

	Per Net Ton
Furnace, f.o.b. Connellsville prompt.....	\$3.50
Foundry, f.o.b. Connellsville prompt.....	\$4.50 to 5.00
Foundry, by-product, Ch'go ovens.....	9.75
Foundry, by-product, New England, del'd.....	12.00
Foundry, by-product, Newark or Jersey City, delivered.....	9.50 to 10.77
Foundry, Birmingham.....	5.50 to 6.00
Foundry, by-product, St. Louis or Granite City.....	10.00

Coal

	Per Net Ton
Mine run steam coal, f.o.b. W. Pa. mines.....	\$1.50 to \$2.00
Mine run coking coal, f.o.b. W. Pa. mines.....	1.85 to 2.00
Mine run gas coal, f.o.b. Pa. mines.....	2.10 to 2.20
Steam slack, f.o.b. W. Pa. mines.....	1.20 to 1.25
Gas slack, f.o.b. W. Pa. mines.....	1.35 to 1.50

Ferromanganese

	Per Gross Ton
Domestic, 80%, furnace or seab'd, \$28.00 to \$35.00	
Foreign, 80%, Atlantic or Gulf port, duty paid.....	88.00

Spiegeleisen

	Per Gross Ton Furnace
Domestic, 19 to 21%.....	\$32.00 to \$34.00
Domestic, 16 to 19%.....	\$31.00 to \$33.00

Electric Ferrosilicon

	Per Gross Ton Delivered
50%.....	\$85.00 to \$87.50
75%.....	145.00 to 150.00
10%.....	\$35.00
11%.....	37.00

Bessemer Ferrosilicon

f.o.b. Jackson County, Ohio, Furnaces	Per Gross Ton
10%.....	\$33.00
11%.....	35.00

Silvery Iron

f.o.b. Jackson County, Ohio, Furnaces	Per Gross Ton
6%.....	\$25.50
7%.....	26.50
8%.....	27.50
9%.....	29.00

Other Ferroalloys

	Per Gross Ton
Ferro tungsten, per lb. contained metal, del'd.....	\$1.05 to \$1.10
Ferro chromium, 4 to 6% carbon and up, 60 to 70% Cr., per lb. contained Cr. delivered, in carloads.....	11.50c.
Ferro vanadium, per lb. contained vanadium, f.o.b. furnace.....	\$3.25 to \$4.00
Ferrocarbontitanium, 15 to 18% per net ton, f.o.b. furnace, in carloads.....	\$200.00
Ferro phosphorus, electric or blast furnace material, in carloads, 18%, Rockdale, Tenn., base, per net ton.....	\$91.00
Ferro phosphorus, electric, 24%, f.o.b. Anniston, Ala., per net ton.....	\$122.50

Mill Prices of Bolts, Nuts, Rivets and Set Screws

Bolts and Nuts

(Less-than-Carload Lots)

(F.o.b. Pittsburgh, Cleveland, Birmingham and Chicago)

Per Cent Off List

Machine bolts, small, rolled threads.....	60 and 10
Machine bolts, all sizes, cut threads.....	60, 10 and 10
Carriage bolts, smaller and shorter, rolled threads.....	60, 10 and 10
Carriage bolts, cut threads, all sizes.....	50 and 10
Eagle carriage bolts.....	65 and 10
Lag bolts.....	60, 10 and 10
Plow bolts, Nos. 3 and 7 heads.....	50 and 10
(Extra of 20% for other style heads)	
Machine bolts, e.p.c. and t. nuts, $\frac{1}{4}$ x 4 in.....	45, 10 and 5
Larger and longer sizes.....	45, 10 and 5
Bolt ends with hot-pressed nuts.....	50, 10 and 10
Bolt ends with cold-pressed nuts.....	45, 10 and 5
Hot-pressed nuts, blank and tapped, square, 4.00c. per lb. off list	
Hot-pressed nuts, blank or tapped, hexagon, 4.40c. per lb. off list	
C.p.c. and t. square or hex. nuts, blank or tapped, 4.10c. per lb. off list	
Washers*.....	6.50c. to 6.25c. per lb. off list

*f.o.b. Chicago and Pittsburgh.

The discount on machine, carriage and lag bolts is 5 per cent more than above for car lots. On hot-pressed and cold-punched nuts the discount is 25c. more per 100 lb. than quoted above for car lots.

Bolts and Nuts

(Quoted with actual freight allowed up to but not exceeding 50c. per 100 lb.)

Per Cent Off List

Semi-finished hexagon nuts:	
1/4 in. and smaller, U. S. S.....	80, 10 and 5
5/16 in. and larger, U. S. S.....	75, 10 and 5
Small sizes, S. A. E. 5/16 in. and larger.....	80, 10 and 5
S. A. E. 5/16 in. and larger.....	75, 10 and 5
Stove bolts in packages.....	80 and 10
Stove bolts in bulk.....	80, 10 and 2 1/2
Tire bolts.....	60 and 5

(Actual freight allowed up to but not exceeding 50c. per 100 lb.)

(To Jobbers and consumers in large quantities)

Per 100 Net S.A.E. U.S.S.	Per 100 Net S.A.E. U.S.S.
1/4-in. \$0.44	\$0.44
5/16-in. 0.515	0.515
3/8-in. 0.62	0.60
7/16-in. 0.79	0.90
1-in. 1.01	1.05
1 1/16-in. 1.38	1.42
1 1/8-in. 1.70	1.73

Larger sizes.—Prices on application.

Large Rivets

Base Per 100 Lb.

F.o.b. Pittsburgh..... \$2.50 to \$2.60

F.o.b. Cleveland..... 2.70

F.o.b. Chicago..... \$2.60 to 2.75

Small Rivets

Per Cent Off List

Milled cap screws.....	30 and 10
Milled standard set screws, case hardened, 80 and 5	
Milled headless set screws, opt. thread.....	30
Upset hex. head cap screws, U. S. S. thread, 80, 10 and 10	
Upset hex. cap screws, B.A.E. thread, 80, 10 and 10	
Upset set screws.....	30, 10 and 5
Milled studs.....	70 and 5

Chicago

Railroads Enter Market for Cars and Rails—Steel Specifications Large

CHICAGO, Sept. 21.—Prospective railroad buying is the center of attention in the local market. Eastern railroads with terminals at Chicago are making known their rail requirements, and mills report that specifications for delivery this fall will be heavy. It is probable, therefore, that the rail mills, which have not been particularly active since the middle of August, will soon be speeded up. Directors of the Chicago & North Western have authorized the expenditure of close to \$12,000,000 for new freight and passenger equipment, 2000 refrigerator cars have been placed with Western car builders, and the Great Northern is taking figures on 500 automobile car underframes.

Both sales and specifications for the past seven days were the heaviest in six weeks. In fact, sales of finished material were 14 per cent larger than in the best previous week in six months. Specifications from the automobile industry for delivery during October are fully as heavy as those for September. Activity in billet steel bars is unusually brisk, and rail steel bars are moving in large volume.

The Steel Corporation is operating 17 blast furnaces out of 27, and with eight independent steel works furnaces in, there are 25 active furnaces out of a total of 36 in the district.

Pig Iron.—Sales for the week are in good volume, with purchasers coming into the market for their requirements in the remainder of the third quarter and for the rest of the year. Here and there a little interest is shown in the first quarter needs, and some iron has been sold for that period. Prices in this territory are steady, with Northern No. 2 foundry iron still quoted at \$21, local furnace. Production at the moment is not equal to shipments, which have gradually grown heavier since the first of September. Hold orders are reported as being unusually light. Merchant furnaces now in blast include one Mayville, two Iroquois, two Federal furnaces, and the Zenith and Thomas stacks. Silvery has been unusually active, and miscellaneous lots sold this week for delivery over the remainder of the year total more than 5000 tons. Silvery is firm, with 8 per cent quoted at \$32.29, delivered.

Quotations on Northern foundry, high phosphorus and malleable iron are f.o.b. local furnace, and do not include an average switching charge of 61c. per ton. Other prices are for iron delivered at consumers' yards:

Northern No. 2 foundry, sil. 1.75 to 2.25	\$21.00
Northern No. 1 foundry, sil. 2.25 to 2.75	21.50
Malleable, not over 2.25 sil.	21.00
High phosphorus	21.00
Lake Superior charcoal, averaging sil. 1.50, delivered at Chicago	29.04
Southern No. 2 (all rail)	27.01
Southern No. 2 (barge and rail)	25.18
Low phos., sil. 1 to 2 per cent, copper free	\$29.50 to 30.00
Silvery, sil. 8 per cent	32.29
Essenmeyer ferrosilicon, 14 to 15 per cent	45.79

Ferroalloys.—Reports of an advance to \$95, seaboard, on ferromanganese cannot be verified, and meanwhile several small sales for delivery this year have been made at \$88, seaboard, or \$95.56 delivered. Spiegeleisen is quiet, with domestic material hard to obtain. The quotation for the 18 to 22 per cent grade is nominally \$34, Hazzard, Pa., or \$41.56, delivered. Some foreign spiegeleisen of that grade is still available, and several small lots are said to have been sold at \$36, New Orleans, or \$43.56, delivered.

We quote 80 per cent ferromanganese, \$95.56, delivered Chicago; 50 per cent ferrosilicon, \$85, delivered; spiegeleisen, 18 to 22 per cent, \$41.56, delivered Chicago.

Sheets.—Sheet business in this territory is brisk, and Western makers are booked until well toward the first of December, although rolling schedules are so arranged that deliveries are averaging four to six

weeks. Buying is largely from hand to mouth and for shipment as promptly as mills can make delivery. Contracts on makers' books are not heavy, but specifications against old obligations are in good volume. New business and specifications combined are in excess of shipments.

Chicago delivered prices from mill are 3.15c. for No. 24 black; 2.45c. for No. 10 blue annealed; 4c. for No. 24 galvanized. Delivered prices at other Western points are equal to the freight from Gary plus the mill prices, which are 5c. per 100 lb. lower than the Chicago delivered prices.

Plates.—Interest in railroad-equipment purchases has revived with the announcement that the American Refrigerator Transit Co. has placed 2000 refrigerator cars and that the directors of the Chicago & North Western have authorized the purchase of about \$12,000,000 worth of rolling stock. The refrigerator cars were placed as follows: 1000 with the American Car & Foundry Co., 500 with the General American Car Co., and 500 with the Pressed Steel Car Co. Since each car will require approximately 8½ tons of plates, shapes and bars, Western mills will book a total of about 17,000 tons. As now outlined, the Chicago & North Western inquiry will call for 100 flat cars, 500 hopper cars, 100 gondola cars, 250 ore cars, 25 caboose cars, 500 stock, 1000 automobile and two dump cars. The passenger equipment authorized consists of 133 coaches and baggage cars. In addition, 35 passenger cars will be reconditioned. Users of oil-storage tanks remain in the market, and mills this week quoted on more than 6000 tons in new inquiries. The Illinois Power & Light Co. is asking bids on a gas holder, which will require 500 tons of steel. On the whole, the demand for plates is slightly better than during the summer months. Mill quotations are steady at 2.10c., Chicago.

The mill quotation on plates is 2.10c. per lb., base, Chicago.

Structural Material.—Labor trouble in the local building field is less acute, and structural inquiry is in greater volume. Fabricating shops are well supplied with work, and estimating departments are being pressed for figures. Fabricators estimate that 30,000 to 35,000 tons is pending, including 16,000 tons required for the Pittsfield and the State Bank of Chicago buildings. Fabricators this week forwarded specifications to the mills for 5000 tons of plain material. Two Illinois State bridges just contracted require 3600 tons. Owing to the dearth of large lettings recently, indications are that competition will be keen for the two 8000-ton projects now before the trade. However, reports of price concessions on plain material cannot be verified.

The mill quotation on plain material is 2.10c. per lb. base, Chicago.

Bars.—In specifications for mild steel bars the first 16 days of September were 90 per cent ahead of the same period in August. A fair share of this tonnage is being taken by reinforcing steel warehouses, and makers of farm machinery are now making known their early fall requirements. Business emanating from the automobile industry shows no tendency to diminish, notwithstanding reports that sales of automobiles are off 20 per cent from the peak of midsummer. On the whole, specifications are good from all branches of industry, and producers believe that current shipments represent actual consumptive requirements. The Chicago mill price on mild steel bars is steady at 2.10c. Makers of iron bars are operating from hand to mouth, with specifications and new business light from practically all sources. There is no let-up in the demand for rail-steel bars, and prices are steady at 2c., Chicago. Fence-post shipments are heavy and in greater volume than a year ago. Mill backlog have shown little change throughout the summer and early fall, and operations stand as they have throughout the year. Barn equipment makers are showing more activity and manufacturers of metal beds are enjoying a good volume of business, which is reflected in orders to mills for rail-steel stock.

Mill prices per lb. are: Mild steel bars, 2.10c., base, Chicago; common bar iron, 2c., base, Chicago; rail steel bars, 2c., base, Chicago.

Wire Products.—Floods throughout the central Mississippi Valley have seriously interfered with dis-

tribution, and this is now reflected in the volume of orders received by mills. Jobbers' stocks are low, and the inability of railroads to operate satisfactorily is causing serious inconvenience to the retail trade. Trade in the Northwest is slow, and mills do not look for it to improve because of this year's crop failure. Business emanating from the East, the South and the Mountain States is in unchanged volume. Liberal specifications are coming from manufacturing consumers, especially makers of automobiles and farm implements. Mill operations are between 60 and 65 per cent of capacity. Mill prices, which are unchanged, are shown on page 877.

Bolts, Nuts and Rivets.—The advanced quotations on stove bolts lack strength, although a few contracts for the fourth quarter have been closed in this territory at the new discounts. On the whole, fourth quarter contracts are now about 50 per cent closed. Specifications are about equal to those of a year ago at this time.

Rails and Track Supplies.—The fall rail-buying movement is well under way, and mills now have definite inquiries for 220,000 tons and expect as much more within a few days. The Pennsylvania Railroad has placed 40,000 tons of standard-section rails, of which 8000 tons went to the Illinois Steel Co. and 20,000 tons was placed with the Carnegie Steel Co. This railroad has issued a fresh inquiry for 160,000 tons of rails. These tonnages do not include track accessories, which will be purchased later. The Chesapeake & Ohio is asking for 54,000 tons of rails and 8000 tons of track supplies. The Louisville & Nashville is asking for fourth and first quarter deliveries on 8000 kegs of bolts, 18,000 kegs of spikes and 6000 tons of angle bars. Inquiries for steel tie plates from Western railroads total to 5000 tons. Light rails are quiet, mills having booked only 350 tons during the week.

Standard Bessemer and open-hearth rails, \$48; light rails, rolled from billets, \$36 to \$38 per gross ton, f.o.b. maker's mill.

Standard railroad spikes, 2.90c. per lb. mill; track bolts with square nuts, 3.90c. mill; steel tie plates, 2.35c. mill; angle bars, 2.75c. mill.

Hot-Rolled Strip.—Demand is good, and specifications, especially from makers of automobiles and parts, are large. Prices are steady at 2.60c., Chicago, for 6-in. and narrower material and at 2.50c. for wider strip.

Cast Iron Pipe.—Detroit will open bids Sept. 29 on 2420 tons of 12-in. and 1898 tons of 16-in. Class C pipe. It is reported that the United States Cast Iron Pipe & Foundry Co. has taken 700 tons of 6 and 8-in. Class B pipe for Lucas County, Ohio, and 150 tons of 12-in. Class B pipe for Highland Park, Ill. On the whole, the market is fairly active, although this is due in the main to a relatively large number of small orders. Makers' books are well filled and well balanced. Public utilities in and around Chicago have been good buyers in small-tonnage lots. The price situation shows little

change. On very small tonnages \$41, Birmingham, for 6-in. and larger diameters is being done, while \$40 represents the market on sales of average size. Attractive tonnages are being quoted at \$39 to \$40, Birmingham.

We quote per net ton, delivered, Chicago, as follows: Water pipe, 4-in., \$51.20 to \$53.20; 6-in. and over, \$47.20 to \$49.20; Class A and Gas pipe, \$4 extra.

Reinforcing Bars.—The market is showing a little more activity, but it is still far short of dealers' expectations for this time of the year. Meanwhile, shipments from warehouses are steady, and there is no slackening in bar bending. Efforts to advance prices to the level of early summer have failed, and the market on billet bars is weak at 2.25c. to 2.60c., local warehouse, depending upon the size of the contract. Awards and fresh inquiries are shown on page 890.

Coke.—Reports of coal price advances by certain producers have had no effect on the local foundry coke prices, which are unchanged. Users are well covered for the fourth quarter, and shipments are going forward at a rate approximating capacity production of local ovens.

Old Material.—The market is decidedly weaker, and the prices of a number of grades have declined. On the whole, consumptive demand is good, but dealers are finding that in many instances users' stocks have grown during the late summer and early fall and there is less need for quick buying and prompt delivery. Trading among dealers is light, and it appears that current railroad shipments, together with scrap sold by factories, are more than ample to take care of the immediate demand. Two users of heavy melting steel were in the market this week and took large tonnages at \$14.50 per gross ton, delivered. Dealers find, however, that this price cannot again be obtained, and consumers are refusing to make further offers. A fair tonnage of railroad malleable was taken at \$18 per gross ton, delivered, but users would not pay more than \$14 per net ton, delivered, for brake shoes. Grate bars are off 25c. a ton. Borings are also weak, and users are refusing to consider dealers' offerings. Among the new railroad lists are 4000 tons offered by the Burlington and 650 tons advertised by the Elgin, Joliet & Eastern.

We quote delivered in consumers' yards, Chicago and vicinity, all freight and transfer charges paid for all items, except relaying rails, including angle bars to match, which are quoted f.o.b. dealers' yards:

Per Gross Ton

Heavy melting steel.....	\$14.00 to \$14.50
Frogs, switches and guards, cut apart, and miscellaneous rails.....	16.00 to 16.50
Shoveling steel	13.75 to 14.25
Hydraulic compressed sheets.....	12.50 to 13.00
Drop forge flashings.....	9.50 to 10.00
Forged cast and rolled steel car-wheels.....	17.50 to 18.00
Railroad tires, charging box size.....	18.25 to 18.75
Railroad leaf springs, cut apart.....	18.00 to 18.50
Steel couplers and knuckles.....	17.25 to 17.75
Coil springs	18.50 to 19.00
Low phosphorus punchings.....	17.00 to 17.50
Axle turnings, foundry grade.....	14.25 to 14.75
Axle turnings, blast fur, grade.....	12.25 to 12.75
Relaying rails, 56 to 60 lb.....	25.50 to 26.50
Relaying rails, 65 lb. and heavier.....	26.00 to 31.00
Rerolling rails	17.50 to 18.00
Steel rails, less than 3 ft.....	17.50 to 18.00
Iron rails	14.50 to 15.00
Cast iron borings.....	11.25 to 11.75
Short shoveling turnings.....	11.25 to 11.75
Machine shop turnings.....	7.75 to 8.25
Railroad malleable	17.50 to 18.00
Agricultural malleable	15.50 to 16.00
Angle bars, steel.....	16.25 to 16.75
Cast iron carwheels.....	15.25 to 15.75

Per Net Ton

No. 1 machinery cast.....	17.00 to 17.50
No. 1 railroad cast.....	16.25 to 16.75
No. 1 agricultural cast.....	16.00 to 16.50
Stove plate.....	14.50 to 15.00
Grate bars	14.00 to 14.50
Brake shoes	13.50 to 14.00
Iron angle and splice bars.....	14.00 to 14.50
Iron arch bars and transoms.....	20.00 to 20.50
Iron car axles.....	22.00 to 22.50
Steel car axles.....	17.50 to 18.00
No. 1 railroad wrought.....	13.50 to 14.00
No. 2 railroad wrought.....	12.50 to 13.00
No. 1 busheling	11.50 to 12.00
No. 2 busheling	7.50 to 8.00
Locomotive tires, smooth.....	17.00 to 17.50
Pipes and flues.....	10.00 to 10.50

Warehouse Prices, f.o.b. Chicago

	Base per Lb.
Plates and structural shapes.....	2.10c.
Mild steel bars	2.00c.
Reinforcing bars, billet steel.....	2.25c. to 2.60c.
Cold-finished steel bars and shafting—	
Rounds and hexagons	2.60c.
Flats and squares	4.10c.
Hoops	4.15c.
Bands	3.65c.
No. 24 black sheets	2.95c.
No. 10 blue annealed sheets	3.50c.
No. 24 galvanized sheets	4.80c.
Standard railroad spikes	3.55c.
Track bolts	4.55c.
Structural rivets	3.50c.
Boiler rivets	3.70c.
<i>Per Cent Off List</i>	
Machine bolts .....	.50 and .5
Carriage bolts .....	.47 1/2
Coach or lag screws .....	.55 and .5
Hot-pressed nuts, square, tapped or blank,	3.25c. off per lb.
Hot-pressed nuts, hexagons, tapped or blank,	3.75c. off per lb.
No. 8 black annealed wire, per 100 lb.	\$2.20
Common wire nails, base, per kg.	2.05
Cement coated nails, base, per kg.	2.05

Philadelphia

Pennsylvania Railroad Inquires for 22,000 Tons of Steel

PHILADELPHIA, Sept. 21.—Railroads have begun to put out inquiries for fourth quarter steel. The comparatively small orders placed during the summer by the railroads indicate that they have little or no steel stocks and lead to the belief that fall buying will entail a good volume of tonnage. The Pennsylvania System is asking for bids under the Clayton act for 22,200 tons of plates, shapes and bars. The finished steel market shows moderate activity. Orders coming to makers are sustaining operations at an unchanged rate. In the event the carriers do come actively into the market for large tonnages, increased schedules are expected, even allowing for a slight letup in other business, which, it has been pointed out, might develop for a period during the fall.

Pig Iron.—Prices are holding well. The level of \$21, base, furnace, for foundry is being closely adhered to and orders continue to be booked at that figure. Makers, as a matter of fact, are talking of higher prices. One furnace interest in this district has advanced prices 50c. a ton for fourth quarter delivery, but is not actively seeking business at the higher quotation. This particular producer is booked for the remainder of the year and also has reduced its stocks to a low point. Two other makers in this district are contemplating a similar advance. Foreign iron is so near to domestic iron in price that it is not an important factor in the market except in restraining advances. Inquiries for iron call for small lots as a general thing but are rather numerous and when totaled reach an attractive tonnage. The Baldwin Locomotive Works is inquiring for 1000 tons of "floor grade" iron, including No. 1X and No. 2X, for delivery over the remainder of the year. Levering Brothers, Baltimore, are asking for 400 tons of No. 2X iron for delivery at their York, Pa., foundry. The American Steel Foundries have put out an inquiry for 2000 tons of copper free low phosphorus iron for fourth quarter shipment, 1000 tons being for its Indiana Harbor, Ind., plant, 500 tons for the Pittsburgh plant and 500 tons for the Chester, Pa., plant. It is believed the tonnage will be distributed among domestic makers. This grade of iron is meeting little, if any, competition from abroad because of the coal strike in England. The price of low phosphorus iron is being maintained at \$22 to \$23, furnace, for standard material, and at \$23.50 to \$24, furnace, for copper bearing. One maker reports sales of 1000 tons of low phosphorus iron and a similar tonnage of foundry iron. A nearby foundry has withdrawn an inquiry for about 3000 tons of reserve mixed grades of foundry iron after being unable to receive quotations under \$21, base.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia and include freight rates varying from 76c. to \$1.63 per gross ton:

East. Pa. No. 2 plain, 1.75 to 2.25 srl.	\$21.76 to \$22.26
East. Pa. No. 2X, 2.25 to 2.75 srl.	22.26 to 22.76
East. Pa. No. 1X.....	22.76 to 23.26
Virginia No. 2 plain, 1.75 to 2.25 srl.	27.67 to 28.67
Virginia No. 2X, 2.25 to 2.75 srl.	28.17 to 29.17
Basic delivered eastern Pa.....	20.75 to 21.50
Gray forge.....	21.00 to 22.00
Malleable.....	22.00 to 22.50
Standard low phos. (f.o.b. fur- nace).....	22.00 to 23.00
Copper bearing low phos. (f.o.b. furnace).....	23.50 to 24.00

Plates.—Inquiries for plates for fourth quarter delivery have been put out by the railroads. The Pennsylvania System is asking for bids under the Clayton act for 15,000 tons. This development has led to the hope that the railroads, after a dull season of buying, will come into the market during the fall for good-sized tonnages. Whether the inquiries put out by the carriers presage a buying movement of considerable proportions remains to be seen. But the absence of steel stocks, or the small amount of tonnage in the hands of the railroads, apparently lends color to the prospect of heavier buying for various kinds of steel, including plates for locomotives and cars. The Bald-

win Locomotive Works has taken an order for 28 locomotives for shipment to South America. Prices are quoted at 1.90c., Pittsburgh, and are said to be well maintained.

Structural Material.—Structural material is quoted at 2c., Pittsburgh, and the price is fairly stable at this figure, though on larger tonnages there are evidences that it has been shaded from \$1 to \$2 a ton. Demand is fair, and fabricating shops are well filled. Some of them have sufficient bookings or prospective bookings to carry them over the remainder of the year. Specifications against contracts are somewhat better than they have been. Steel work for towers, 850 tons, for electrification of the Pennsylvania Railroad between Philadelphia and Wilmington, Del., has been let to the Belmont Iron Works. Bids were taken last week for the construction of car barns for the Philadelphia Rapid Transit Co. Fern Rock terminal for subways. The general contract was awarded to the Golder Construction Co. The project will call for 2000 tons of steel. The Pennsylvania System is asking for 700 tons of standard shapes for fourth quarter delivery.

Bars.—While demand for merchant steel bars is only moderate, makers state that the price of 2c., base, Pittsburgh, is being maintained and that some fourth quarter business has been taken at this level. The Pennsylvania System is asking bids for 5500 tons of soft steel bars for fourth quarter shipment. Consumers of iron bars are showing no anxiety to buy for the last quarter. Makers are quoting 1.90c., Pittsburgh, for carloads or larger lots, while for less than carloads the price quoted is 2c., Pittsburgh.

Sheets.—Fair business is being done in black and galvanized sheets, though it is not brisk. Orders booked in advance of adoption of the new gage basis have reflected themselves in a smaller amount of buying by consumers, who had anticipated this change in quoting. Quotations generally made on blue annealed sheets are at a level of 2.30c., Pittsburgh, but some sales are being made at \$1 a ton less.

Ferromanganese.—The market for ferroalloys is dull. Sales call for small lots only.

Billets.—Sales of billets are limited and the market is quiet. Quotations are \$35, Pittsburgh, for rerolling material and \$40, Pittsburgh, for the forging quality.

Bolts, Nuts and Rivets.—Makers of bolts report good bookings for the fourth quarter, while orders taken for nuts and rivets are not so large.

Imports.—The only pig iron to arrive at Philadelphia from abroad last week was 1460 tons from Germany. Other imports were as follows: Structural steel from Belgium, 413 tons; steel ingots from Germany, 4 tons; steel bands from Germany, 10 tons; cast iron pipe from France, 111 tons; galvanized steel strips from England, 11 tons; chrome ore from Portuguese East Africa, 464 tons; chrome ore from British South Africa, 418 tons; manganese ore from British West Africa, 5013 tons.

Warehouse Prices, f.o.b. Philadelphia

	Base per Lb.
Tank steel plates, $\frac{3}{4}$ -in. and heavier.....	2.80c. to 3.00c.
Tank steel plates, $\frac{1}{2}$ -in.....	3.00c.
Structural shapes.....	2.75c. to 2.90c.
Soft steel bars, small shapes and iron bars (except bands).....	3.00c.
Round-edge iron.....	3.50c.
Round-edge steel, iron finished, $1\frac{1}{2}$ x $1\frac{1}{2}$ in.....	3.50c.
Round-edge steel, planished.....	4.30c.
Reinforcing steel bars, square, twisted and deformed.....	3.00c.
Cold-finished steel, rounds and hexagons.....	4.00c.
Cold-finished steel, squares and flats.....	4.50c.
Steel hoops.....	4.00c. to 4.25c.
Steel bands: No. 12 gage to $\frac{1}{4}$ -in., inclusive.....	3.75c. to 3.90c.
Spring steel.....	5.00c.
No. 24 black sheets.....	4.25c.
No. 10 blue annealed sheets.....	3.40c.
No. 24 galvanized sheets.....	5.20c.
Diamond pattern floor plates— $\frac{1}{4}$ -in.....	5.30c.
$\frac{1}{2}$ -in.....	5.50c.
Rails.....	3.20c.
Tool steel.....	8.50c.
Swedish iron bars.....	6.00c. to 6.50c.

Old Material.—Further easement has developed in the market for scrap steel. A number of grades have declined another 50c. a ton for the second consecutive week. The decreases have occurred in bundled sheets, mixed borings and turnings for blast furnaces, machine shop turnings for steel works, heavy axle turnings and cast borings. Steel makers appear to be comfortably supplied since the recent buying movement and it also is evident that tonnage has come out in greater quantities than had been anticipated. This has resulted in some consumers asking that shipments be held up, bringing about an unfavorable reaction on the market. Buyers appear indifferent. At the same time dealers are not showing anxiety to sell. They still are holding heavy melting steel at \$17, but the market for this grade has not been tested the past week.

We quote for delivery, consuming points in this district, as follows:

No. 1 heavy melting steel.....	\$17.00
Scrap rails.....	17.00
Steel rails for rolling.....	\$17.50 to 18.00
No. 1 low phosph. heavy, 6.04 per cent and under.....	21.00 to 22.00
Couplers and knuckles.....	19.00 to 19.50
Rolled steel wheels.....	19.00 to 19.50
Cast iron carwheels.....	17.50 to 18.00
No. 1 railroad wrought.....	17.50 to 18.00
No. 1 forge fire.....	14.50
Bundled sheets (for steel works).....	12.50
Mixed borings and turnings (for blast furnace).....	12.00 to 13.00
Machine shop turnings (for steel works).....	13.50
Machine shop turnings (for rolling mill).....	14.00 to 14.50
Heavy axle turnings (or equivalent).....	14.50 to 15.00
Cast borings (for steel works and rolling mill).....	14.00
Cast borings (for chemical plant).....	16.50
No. 1 cast.....	18.00 to 18.50
Heavy breakable cast (for steel works).....	16.50 to 17.00
Railroad grating bars.....	14.00 to 14.50
Stove plate (for steel works).....	14.00 to 14.50
Wrought iron and soft steel pipes and tubes (new specifications).....	15.50 to 16.00
Shafting.....	22.00 to 23.00
Steel axles.....	24.00 to 25.00

New York

New England Stack Invades Local Market—9600 Tons of Steel for Subways

NEW YORK, Sept. 21.—The new Everett, Mass., furnace, which is scheduled to go into blast next Monday, has invaded both the New York and Philadelphia markets. It not only participated in an order for 1000 tons placed by a Brooklyn melter but also booked 1500 tons for barge shipment to the Philadelphia district, presumably for delivery to a pipe foundry. Sales by local brokers during the past week totaled about 20,000 tons, of which the largest order reported was 4000 tons. Most current orders, however, are for moderate-sized lots, ranging from 100 tons to 500 tons. Typical of recent purchases are 500-ton lots placed by the Eastern Malleable Iron Co., Naugatuck, Conn., and the Richardson & Boynton Co., New York, for its Dover, N. J., plant. Prices quoted by some furnaces are stronger, but there are still some stacks pressing for business, among them one which still has large stocks of piled iron. Pending inquiry is not large, but selling agencies by persistently canvassing the trade are uncovering considerable business. While melters are still disposed to buy cautiously, a few have bought for first quarter and at least one inquiry for second quarter has been issued.

We quote per gross ton delivered in the New York district as follows, having added to furnace prices \$2.52 freight from eastern Pennsylvania, \$4.91 from Buffalo and \$5.54 from Virginia:

East Pa. No. 2 fdy., sll. 1.75 to 2.25	\$21.89 to \$22.02
East Pa. No. 2X fdy., sll. 2.25 to 2.75	22.39 to 22.52
East Pa. No. 1X fdy., sll. 2.75 to 3.25	22.89 to 24.02
Buffalo fdy., sll. 1.75 to 2.25 (all rail)	22.91 to 23.91
No. 2 plain fdy., sll. 1.75 to 2.25 (by barge, del'd alongside in lighterage limits, N. Y. and Brooklyn)	20.00 to 21.00
No. 2 Virginia fdy., sll. 1.75 to 2.25	27.54 to 28.04

Finished Steel.—An even, steady flow of steel orders is reported by all local sales offices of steel companies. The total thus far in September in some offices exceeds the total for the same number of days in July and August. Fourth quarter contracts are being entered for plates, shapes and bars at 1.90c., Pittsburgh, for plates and 2c. for shapes and bars. Reports here indicate that there has been no deviation from these prices. The plate market shows unusual strength, notwithstanding the fact that the tonnage booked in not as heavy as in some other lines. Car builders, who usually have been favored by concessions of \$1 to \$3 a ton, are now paying 1.85c. for plates and may soon be charged 1.90c. No other class of plate buyers, it is stated, is obtaining any concession. The sheet market is strong, and the tendency of prices is upward. Some mills are now asking 3.10c., Pittsburgh, for black, 4c. for galvanized and 2.40c. for blue annealed for fourth quarter, but some orders for nearby delivery, when mills are able to make such delivery, which is seldom, are being taken at lower prices, but not below 3c. for black and 3.85c. for galvanized, while blue annealed is usually 2.30c. Sales of substantial lots of tin mill

Warehouse Prices, f.o.b. New York

Base per Lb.

Plates and structural shapes.....	3.34c.
Soft steel bars and small shapes.....	3.34c.
Iron bars.....	3.34c.
Iron bars, Swedish charcoal.....	7.00c. to 7.25c.
Cold-finished steel shafting and screw stock—	
Round and hexagons.....	4.00c.
Flats and squares.....	4.50c.
Cold-rolled strip, soft and quarter hard.....	6.25c.
Hoops.....	4.49c.
Bands.....	3.99c.
Blue annealed sheets (No. 10 gage).....	3.89c.
Long term sheets (No. 28 gage).....	6.35c.
Standard tool steel.....	12.00c.
Wire, black annealed.....	4.50c.
Wire, galvanized annealed.....	5.15c.
Tire steel, 1 1/2 x 1/8 in. and larger.....	3.30c.
Smooth finish, 1 to 2 1/2 x 1/4 in. and larger.....	3.65c.
Open-hearth spring steel, bases.....	4.50c. to 7.00c.

Per Cent Off List

Machine bolts, cut thread.....	.40 and 10
Carriage bolts, cut thread.....	.30 and 10
Coach screws.....	.40 and 10
Boiler Tubes—	Per 100 Ft.
Lap welded steel, 2-in.....	.917.33
Seamless steel, 2-in.....	30.24
Charcoal iron, 2-in.....	25.00
Charcoal iron, 4-in.....	67.00

Discounts on Welded Pipe

Standard Steel—	Black	Galv.
1/2-in. butt.....	46	39
5/8-in. butt.....	51	37
1 1/2-in. butt.....	53	39
2 1/2-6-in. lap.....	48	35
7 and 8-in. lap.....	44	37
11 and 12-in. lap.....	87	72

Wrought Iron—

1 1/2-in. butt.....	4	+ 19
5/8-in. butt.....	11	+ 9
1-1 1/2-in. butt.....	14	+ 6
2-in. lap.....	5	+ 14
3-6-in. lap.....	11	+ 6
7-12-in. lap.....	8	+ 16

Tin Plate (14 x 30 in.)

Prime	Seconds
Coke, 100 lb. base box.....	\$6.45
Charcoal, per box—	A AAA
IC.....	89.70
IX.....	12.00
IXX.....	13.00

Terne Plate (14 x 30 in.)

IC—20-lb. coating.....	\$16.00 to \$11.00
IC—30-lb. coating.....	12.00 to 12.00
IC—40-lb. coating.....	13.75 to 14.25

Sheets, Box Annealed—Black, C. R. One Pass	Per Lb.
Nos. 18 to 20.....	4.15c.
No. 22.....	4.30c.
No. 24.....	4.35c.
No. 26.....	4.45c.
No. 28*	4.60c.
No. 30.....	4.85c.

Sheets, Galvanized

Per Lb.
No. 14.....
No. 16.....
No. 18.....
No. 20.....
No. 22.....
No. 24.....
No. 26.....
No. 28*
No. 30.....

*No. 28 and lighter, 26 in. wide, 2c. higher per 100 lb.

black plate have been made at 3.25c., Pittsburgh, whereas the price recently was 3.15c., and long terne plate has been sold at 4.75c., Pittsburgh, compared with a recent price of 4.65c. Cold-rolled strip steel is still weak, with quotations ranging from 3.25c. to 3.50c., Pittsburgh, and there are reports of concessions on plain wire and cold-finished steel bars. Structural steel settings show a falling off. The largest local inquiry is for 9600 tons of fabricated material for subway construction. Railroad car inquiry in fairly large volume is expected soon. The Illinois Central, Missouri Pacific and Missouri-Kansas-Texas are expected to send out inquiries for several thousand cars. The Chicago & North Western has been authorized to buy 2500 cars. The Pennsylvania Railroad has contracted for 3000 tons of fabricated steel parts for cars, with 500 tons more to be placed.

We quote for mill shipments, New York delivery, as follows: Soft steel bars, 2.84c. per lb.; plates, 2.24c.; structural shapes, 2.34c.; bar iron, 2.24c.

Warehouse Business.—Prices on all products from stock are being maintained, with the volume of business in certain lines slightly in excess of August. Structural steel demand continues at a high level, and there is an active business in reinforcing bars. While the jobbers with fairly complete stocks of black and galvanized sheets are adhering closely to the new bases of 4.35c. and 5.10c. per lb. respectively, occasional sales at moderate concessions are still reported. Most of this lower-priced business, however, is in sales of small lots of a single gage.

Cast Iron Pipe.—Fall buying of water and gas pipe is beginning to develop, but thus far most of the business being placed is confined to small lots. It is reported that bids on 10,000 tons of pipe for the city of New York, which were submitted to the Board of Estimate for a decision on the purchase of German pipe, have been returned to the water commissioner with no action taken. Among current inquiries is 2500 tons for Hempstead, L. I., bids on which open Sept. 30. A contract for 300 tons of 20-in. to 24-in. pipe for Kingston, N. Y., has been awarded to B. Nicoll & Co., agents for the Pont-a-Mousson works in France. East Hartford, Conn., has placed 2000 to 3000 tons with the United States Cast Iron Pipe & Foundry Co. Chicopee, Mass., has closed on 300 tons with an unnamed maker. The Department of Water Supply, Gas and Electricity, New York, is taking bids on 200 tons of 30-in. pipe.

We quote pressure pipe per net ton, f.o.b. New York in carload lots, as follows: 6-in. and larger, \$49.60 to \$52.60; 4-in. and 5-in., \$54.60 to \$57.60; 3-in., \$64.60 to \$67.60; with \$5 additional for Class A and gas pipe.

Reinforcing Bars.—The Truscon Steel Co. will furnish 1800 tons for a section of subway in Brooklyn. This is understood to have been one of the jobs for which the contractor had been considering the purchase of foreign bars until last week's ruling by the city Board of Transportation prohibited their use. No inquiries of any size have come out in the last few days, but the contract for reinforcing steel on the Staten Island bridges at Elizabethport, N. J., is expected to be let during the week. The job calls for 2400 tons. Prices are unchanged.

Coke.—Demand is light, but furnace grade continues strong at about \$3.50 per ton and slightly higher for spot shipment. Foundry coke is quiet and unchanged at \$4 to \$5 per ton, Connellsville. Delivered prices of standard foundry are \$7.91 to \$8.91, Newark and Jersey City, N. J., \$8.03 to \$9.03, northern New Jersey, and \$8.79 to \$9.79, New York or Brooklyn. By-product foundry continues at \$9.59 to \$10.77, delivered Newark or Jersey City, N. J.

Old Material.—Buying prices of all grades are softening, and considering the severity of inspection by most of the eastern Pennsylvania consumers, there is a good volume of material coming out. Shipments to Claymont, Del., Coatesville and Pencoyd, Pa., are still suspended. Rejections by Phoenixville, Conshohocken and Bethlehem, Pa., consumers are reported not uncommon. One large eastern Pennsylvania mill is reported to have rejected several hundred cars in the

past fortnight. A Pottsville, Pa., consumer has closed on about 1000 tons of heavy melting steel. Brokers are still paying from \$15.50 to \$17 per ton for No. 1 steel, but the tendency of the market is toward \$16.50 per ton, delivered. Machine shop turnings, borings and turnings, cast borings and steel mill stove plate are off about 50c. per ton on brokers' offers, but in the absence of consumer activity the mill price is unchanged.

Buying prices per gross ton, New York, follow:

Heavy melting steel (yard)	....	\$10.00 to \$10.50
Heavy melting steel (railroad or equivalent)		
Rails for rolling	.....	12.85 to 13.50
Steel car axles	.....	13.25 to 13.75
Iron car axles	.....	21.25 to 21.75
No. 1 railroad wrought	.....	24.50 to 25.25
Forge fire	.....	14.25 to 15.25
No. 1 yard wrought, long	.....	10.50 to 11.00
Cast borings (steel mill)	.....	13.25 to 14.25
Cast borings (chemical)	.....	10.00 to 10.50
Machine shop turnings	.....	12.50 to 14.00
Mixed borings and turnings	.....	9.50 to 10.00
Iron and steel pipe (1 in. diam. not under 2 ft. long)	.....	12.25
Stove plate (steel mill)	.....	10.00 to 10.50
Stove plate (foundry)	.....	11.75 to 12.25
Locomotive grate bars	.....	11.00 to 11.50
Malleable cast (railroad)	.....	16.00 to 16.50
Cast iron carwheels	.....	13.50 to 14.00
No. 1 heavy breakable cast	.....	13.00 to 14.00

Prices which dealers in New York and Brooklyn are quoting to local foundries per gross ton follow:

No. 1 machinery cast	.....	\$16.50 to \$17.00
No. 1 heavy cast (columns, building materials, etc.), cupola size	.....	15.00 to 15.50
No. 2 cast (radiators, cast boilers, etc.)	.....	14.00 to 14.50

Cleveland

Place Fourth Quarter Contracts for Steel —Pig Iron Firmer

CLEVELAND., Sept. 21.—Orders for finished steel against contracts continue heavy, and the tonnage entered the past week showed a gain over the previous week. September so far is slightly ahead of August in the volume of business. The increase in specifications is evidently partly due to the fact that some of the mills have third quarter contracts on their books at 1.90c., Pittsburgh, for steel bars and structural material and have announced that tonnage unspecified by Oct. 1 will be cancelled. For several weeks large consumers showed little interest in fourth quarter contracts, but considerable activity in placing contracts developed the past week, and some of the mills now have the bulk of their consumers covered for steel bars, plates and structural material for the remainder of the year.

The current demand for plates in car lots has slowed down somewhat. New building work is slow in Cleveland and not very active in the surrounding territory. The National Carbon Co. has plans out for factory buildings at Fostoria, Ohio, that will require a round tonnage. The Lake shipbuilding industry has received no recent inquiries for additional boats. Specifications from makers of motor cars and parts are keeping up in good volume, but not much additional fourth quarter buying is reported from that industry. Prices are firm at 2c., Pittsburgh, for steel bars and structural material and at 1.90c. for plates.

Pig Iron.—A good volume of inquiry has developed for the first quarter and half, and one Lake furnace today opened its books for those deliveries with quotations at from 25c. to 50c. a ton above current market prices. While producers agree that prices should be higher, there is a difference of opinion as to how to place the market on a firmer base. Some are inclined to hold off and make no quotations for next year until prices are pushed to somewhat higher levels, and others favor opening their books at once, counting on the demand to cause a strengthening of prices a little later. Whether consumers are willing at present to contract for next year at an advance in prices is yet to be determined. The only round lot so far reported sold for delivery after this year is 1000 tons of malleable iron taken by a Buffalo producer at the current price of

\$20, furnace. The market gained in activity the past week and locally strengthened considerably. A Cleveland furnace which, a week ago, reduced its price 50c. a ton for local delivery, has restored its former price of \$19, and another local interest, which has very little iron left for the last quarter, has advanced its price 25c. a ton to \$18.25, furnace, for outside shipment. Cleveland producers are no longer giving any consideration to a price of \$17.50 in the Valley district, claiming that that price has virtually disappeared, and \$18, furnace, is now the minimum Cleveland quotation for outside shipment. The market is unchanged in western Ohio and Indiana at \$19, Lake furnace, and in Michigan a price of \$19.50, furnace, still prevails. Sales by Cleveland interests the past week aggregated 35,000 to 40,000 tons, being more than double the amount they sold the previous week. A Cleveland producer sold two lots of basic iron, aggregating 12,000 tons, for shipment from a western Pennsylvania furnace at a price slightly better than \$18 at furnace, the seller having some freight advantage over the Valley district. An inquiry from a Muncie, Ind., melter for 6000 tons of malleable iron for the first quarter is still pending, and several other inquiries for lots up to 1000 tons for that delivery came out during the week. A Kokomo, Ind., melter is inquiring for 1000 tons, and a northern Ohio foundry for 500 tons, for the fourth quarter. Low phosphorus iron is no longer plentiful and has advanced 50c. a ton to \$28 on a sale of 750 tons in northern Ohio.

Quotations below, except on basic and low phosphorus iron, are delivered Cleveland, and for local iron include a 50c. switching charge. Ohio silvery and Southern iron prices are based on a \$3.02 freight rate from Jackson and \$6.01 from Birmingham:

Basic Valley furnace.....	\$17.50 to \$18.00
N'th'n No. 2 fdv., sil. 1.75 to 2.25.....	19.50
Southern fdv., sil. 1.75 to 2.25.....	27.01
Malleable.....	19.50
Ohio silvery, 8 per cent.....	30.52
Standard low phos., Valley furnace.....	28.00

Iron Ore.—Stocks of Lake Superior ore at furnaces and Lake Erie docks Sept. 1 were over 2,000,000 tons lower than on the same date a year ago. The amount at furnaces on that date was 26,280,040 tons, and the amount at furnaces and on docks was 32,174,118 tons, as compared with 34,605,270 tons on the same date a year ago. During August there were 4,796,187 tons of Lake Superior ore consumed, or a gain of 9553 tons over July. Central district furnaces consumed 2,437,462 tons, a gain of 67,450 tons for the month. Eastern furnaces consumed 113,795 tons, a gain of 9766 tons. Lake front furnaces consumed 2,129,591 tons, a loss of 55,927 tons for the month, and all-rail furnaces consumed 115,331 tons, a decrease of 11,736 tons for the month. There were 185 furnaces using Lake ore in blast Aug. 31, or the same number as on the last day of July.

Semi-Finished Steel.—Most consumers in this territory have covered for all or part of their fourth quarter requirements at \$36, Cleveland or Youngstown, for sheet bars and \$35 for slabs and large billets. Specifications against contracts are keeping up to recent volume.

Sheets.—The market has a firmer tone, and several makers have advanced prices \$2 a ton to 3.10c., Pittsburgh, for No. 24 gage black sheets and to 2.40c. for blue annealed. On the other hand, several of the mills have not placed in effect the advance to the 3.10c. base, for No. 24 gage full pickled and full cold-rolled

sheets. There is talk of adopting a new No. 24 gage special base for metal furniture stock, making No. 1, 4.15c., as compared with a price of 4.10c. when figured on the present black sheet base. Considerable new sheet business is coming out at the new base prices, but few consumers are showing interest in covering for the last quarter.

Cold-Rolled Strip Steel.—Large orders from the automotive industry have brought out concessions to 3.25c., Cleveland, and while some business has been taken at 3.50c., 3.40c. appears to be the common price except for large lots. Tube stock, on which there is usually a \$5 a ton differential, has settled down to 3.15c., Cleveland. At present prices, strip mills are declining to take fourth quarter contracts. While orders are sufficient to keep them running close to capacity, they are unable to accumulate much of a backlog.

Reinforcing Bars.—Small lots are moving well, but little new work is coming out requiring round tonnages. Mills are trying to hold to 1.80c., mill, for rail steel bars, but this would probably be shaded to 1.75c. on a good inquiry.

Warehouse Business.—Jobbers continue to do a fairly heavy business in all lines. The recent irregularities in warehouse prices on sheets seem to have disappeared.

Coke.—The market is firm, with no price changes on foundry grades. There is some activity in by-product coke for domestic use, but foundry grades are dull. Prices are unchanged at \$4 to \$5 at ovens for standard Connellsburg foundry coke and at \$7.50, ovens, for Ohio by-product coke.

Bolts, Nuts and Rivets.—The leading local rivet manufacturer has opened books for the last quarter at present prices of \$2.60 per 100 lb. for large rivets and 70 and 10 per cent off list for small rivets. Bolt and nut makers, who recently opened their books for the fourth quarter at unchanged prices, are taking a fair number of contracts for that delivery. Bolt and nut specifications are good.

Old Material.—An Eastern steel plant purchased during the past week 45,000 tons of heavy melting steel and compressed sheets from Detroit dealers for shipment by water to Buffalo. Considerable Detroit scrap has already been sent by water to Buffalo this season. It is stated that the round lot purchased the last week practically cleaned out the Detroit yards of the two grades. The prices reported paid were \$14.50 and \$13.75 for No. 1 and No. 2 heavy melting steel respectively and \$13 to \$13.25 for compressed sheet steel, these prices being for the material delivered on the docks in Detroit. An Ohio River steel plant has purchased a round lot of scrap at reported prices of \$15 for shoveling turnings and \$14.50 for mixed borings and turnings. Locally the market is inactive. There is no new demand from mills, but dealers have enough orders to support prices fairly well. However, if there is a tendency in either direction, it is toward weakness. Local dealers are paying \$15.25 to \$15.50 for heavy melting steel, delivered to a Cleveland mill. Two consumers in this territory are holding up scrap shipments.

We quote per gross ton delivered consumers' yards in Cleveland:

Heavy melting steel.....	\$15.25 to \$15.75
Rails for rolling.....	16.25 to 16.50
Rails under 3 ft.....	18.00 to 18.50
Low phosphorus billet, bloom and slab crops.....	19.00 to 19.50
Low phosphorus sheet bar crops.....	18.50 to 19.00
Low phosphorus plate scrap.....	18.50 to 19.00
Low phosphorus forging crops.....	16.75 to 17.25
Cast iron borings.....	11.75 to 12.25
Machine shop turnings.....	11.00 to 11.50
Mixed borings and short turnings.....	11.75 to 12.00
Compressed sheet steel.....	14.00 to 14.25
No. 1 railroad wrought.....	11.50 to 12.00
No. 2 railroad wrought.....	15.50 to 15.75
Railroad malleable.....	18.00 to 18.50
Light bundled sheet stampings.....	12.00 to 12.50
Steel axle turnings.....	12.50 to 13.00
No. 1 cast.....	16.50 to 17.00
No. 1 busheling.....	12.50 to 13.00
No. 2 busheling.....	11.75 to 12.25
Drop forge flashings, 18 in. and under.....	11.50 to 12.00
Railroad grade bars.....	13.50 to 13.90
Stove plate.....	12.50 to 13.00
Pipes and flues.....	10.00 to 10.50

Warehouse Prices, f.o.b. Cleveland

	Base per Lb.
Plates and structural shapes.....	3.00c.
Mild steel bars.....	3.00c.
Cold-finished rounds and hexagons.....	3.90c.
Cold-finished flats and squares.....	4.40c.
Hoops and bands.....	3.65c.
No. 24 black sheets.....	3.70c.
No. 10 blue annealed sheets.....	3.15c.
No. 24 galvanized sheets.....	4.55c.
No. 9 annealed wire, per 100 lb.....	\$2.00
No. 9 galvanized wire, per 100 lb.....	3.45
Common wire nails, base, per keg.....	3.00

San Francisco

Inquiry for 2330 Tons of Steel—Pipe Line to Take 11,000 Tons

SAN FRANCISCO, Sept. 18 (*by Air Mail*).—Of equal importance with the slightly larger inquiry and buying of the week have been a number of developments which indicate that the fourth quarter is likely to bring out larger orders for the heavier forms of steel. An inquiry put out this week by the Western Harvester Co., Stockton, Cal., includes 750 tons of shapes, 290 tons of shafting, 600 tons of bars, 60 tons of plates, 600 tons of galvanized sheets and 30 tons of black sheets. The Southern California Edison Co., Los Angeles, has taken bids, for estimating purposes, on about 11,000 tons of plates for a proposed penstock and pipe line near San Diego, Cal. This company also is expected to come into the market during the fourth quarter for about 1000 tons of shapes and plates for a proposed penstock powerhouse for its Big Creek project. The County Sanitary District, Los Angeles County, Cal., is completing plans for a pipe line for which about 7000 tons of plates may be required, if riveted steel pipe is selected. It is also likely that the Yakima Irrigation District, Ellensburg, Wash., will take bids on about 6000 to 10,000 tons of plates, also for a pipe line.

During the week some of the Eastern independent sheet mills advanced quotations about \$3 per ton on galvanized sheets and about \$2 per ton both on black and blue annealed sheets. These changes apply on the new No. 24 gage bases for black and galvanized sheets. The leading Pacific Coast producer of cement coated nails had issued a new card of extras, which increase ultimate prices from 10c. to 45c. per 100 lb. This is in line with similar action taken recently by Eastern producers.

Pig Iron.—The United States Navy Department is taking bids in Washington, D. C., on about 100 tons of foundry iron for delivery to the Mare Island Navy Yard, near Vallejo, Cal. The Southern Pacific Co., San Francisco, is in the market for about 50 tons of Bessemer iron. Other inquiries are for smaller lots. Quotations are unchanged.

*Utah basic	\$25.00 to \$26.00
*Utah foundry, sll. 2.75 to 3.25 . . .	25.00 to 26.00
**English foundry, sll. 2.75 to 3.25 . . .	25.00
**Indian foundry, sll. 2.75 to 3.25 . . .	25.00
**German foundry, sll. 2.75 to 3.25 . . .	24.25
**Dutch foundry, sll. 2.75 to 3.25 . . .	22.50
**Belgium foundry, sll. 2.75 to 3.25 . . .	22.00

*Delivered San Francisco.

**Duty paid, f.o.b. cars San Francisco.

Shapes.—Bids are expected to be taken within a few weeks on 400 tons for an apartment house in San Francisco and on about 300 tons for a crane runway system for the Yosemite Portland Cement Co., Fresno, Cal. There is a good deal of work in prospect, but definite inquiries have not been numerous. Eastern mills continue to quote plain material at 2.35c., c. i. f. Coast ports.

Plates.—The Lemon Grove & Spring Valley Irrigation District, La Mesa, Cal., will take bids Oct. 1 on about 500 tons of plates for a pipe line, and it also has asked for bids on de Lavaud cast iron pipe and Matheson joint steel pipe. No lettings of 100 tons or over are known to have been placed during the week,

Warehouse Prices, f.o.b. San Francisco

	Base per Lb.
Plates and structural shapes	3.30c.
Mild steel bars and small angles	3.30c.
Small channels and tees, $\frac{3}{8}$ -in. to $2\frac{1}{2}$ -in.	3.90c.
Spring steel, $\frac{3}{8}$ -in. and thicker	7.00c.
No. 24 black sheets	4.90c.
No. 28 black sheets	5.15c.
No. 10 blue annealed sheets	3.90c.
No. 24 galvanized sheets	5.65c.
No. 28 galvanized sheets	6.15c.
Common wire nails, base per keg	\$3.75
Cement coated nails, base per keg	3.00

although bids have closed on two or three projects previously reported. Eastern mills continue to quote 2.30c., c. i. f. Coast ports.

Bars.—A shipment of about 200 tons of soft steel bars was received from Luxemburg this week by a local importer, who is quoting about 1.70c. duty paid, c. i. f. San Francisco. The San Francisco Bridge Co. is low bidder on the general contract for a wharf to be built at Berkeley, Cal., for the Golden Gate Ferry Co. This will require about 800 tons of reinforcing bars. No lettings of importance are known to have been closed during the week. Local jobbers are quoting domestic reinforcing steel at about 2.30c., base, per lb. on lots of 200 tons, 2.40c., base, per lb. on carload lots and about 2.65c. to 2.80c., base, per lb. on less-than-carload lots.

Cast Iron Pipe.—Bids will be received up to Oct. 1 on 2674 tons of de Lavaud cast iron pipe by the Lemon Grove & Spring Valley Irrigation District, La Mesa, Cal. The East Bay Water Co., Oakland, Cal., has placed 1244 tons of 6, 8, 10 and 12-in. Class B cast iron pipe with an unnamed producer. The Roseville Water Co., Roseville, Cal., has awarded 110 tons of 4 and 6-in. Class B pipe to B. Nicoll & Co. The Grinnell Co., of the Pacific is low bidder on 287 tons of 12-in Class B pipe required by the city of Santa Cruz, Cal. Quotations are now general at about \$50, base, water shipment, San Francisco.

Steel Pipe.—Bids on 950 tons of Matheson joint pipe will be received up to Oct. 1 by the Lemon Grove & Spring Valley Irrigation District, La Mesa, Cal. Buying during the week has been confined to small lots.

Sheets.—Some of the Eastern independent mills have advanced quotations about \$3 per ton on galvanized sheets, and about \$2 per ton both on black and blue annealed sheets. This advance, however, has been made by only a few mills. Quotations are as follows: No. 24 gage galvanized sheets, 3.85c. to 4c., base, Pittsburgh; No. 24 gage black sheets, 3c. to 3.10c., base, and No. 10 gage blue annealed sheets, 2.30c. to 2.40c., base.

Rivets.—A carload of structural rivets is understood to have been sold here during the week at \$2.45 per 100 lb., base Pittsburgh, which is equivalent to about \$3 here. This is the lowest quotation on rivets known to have been made to a local buyer in some time.

Coke.—The Southern Pacific Co., San Francisco, has purchased 400 tons of German by-product coke. A local importer has a fresh shipment en route from Germany and is quoting by-product fuel at about \$12 to \$12.50 per net ton at incoming dock.

Birmingham

Ship Rails to Orient—Pig Iron Melt Is Heavy But Buying Is Delayed

BIRMINGHAM, Sept. 21.—A few orders for pig iron for fourth quarter delivery have been placed, but the aggregate business so far transacted for the last three months of the year is not sufficient to indicate that a buying movement is under way. There has been no deviation from \$21, base Birmingham, for No. 2 foundry, and there has been no intimation that a reduction in prices is contemplated. With only 12 blast furnaces on foundry iron, the steady small-lot buying which has been under way for several weeks, is preventing the accumulation of surplus stocks on furnace yards. That a very large tonnage of iron will be needed during the remainder of the year is apparent. The condition of the soil pipe industry has improved, and jobbing foundries are consuming considerable iron. So long as quotations continue on the present base, however, the larger melters will limit purchases to their immediate requirements. Besides 12 furnaces on foundry iron in this State, 10 are on basic and one on special iron.

Steady melters of pig iron include the cast iron pressure pipe producers, radiator shops and stove foundries. The Joubert & Goslin Machine & Foundry Co., one of the larger shops of the district, announces that, in addition to its general machine and foundry business and its output of sugar refinery filter house equipment, it will manufacture heavy chemical apparatus, particular evaporating and drying machines. The Birmingham Machine & Foundry Co., another large shop, is still engaged on an extensive order for cotton presses and, in its diversification of operations, is producing soil pipe and fittings on a large scale, besides gasoline pumps. The Hardie-Tynes Mfg. Co. is pushing work on copper-concentration machinery for Chile, an original contract for which was recently duplicated.

We quote per gross ton, f.o.b. Birmingham district furnaces, as follows:

No. 2 foundry, 1.75 to 2.25 all.	\$21.00
No. 1 foundry, 2.25 to 2.75 all.	21.50
Basic	21.00
Charcoal, warm blast	30.00

Rolled Steel.—Production and shipments from Alabama steel plants are well maintained, although some finishing mills are being held back in favor of mills rolling products which are in more urgent demand. The rail mill is still operating at capacity, with much export business being shipped. Arrangements have been made to move 2500 tons of rails in October by barge. Three thousand tons could not be shipped by barge because the ocean vessel is scheduled to leave Mobile Oct. 18. Several thousand tons of rails which are being moved this month are destined to Japan, and 4500 tons will go to China next month. Fabricating plants are busy. The Virginia Bridge & Iron Co. is furnishing 800 tons of structural steel for a bridge over Martin Dam at the Cherokee Bluff hydroelectric development on the Tallapoosa River in this State, and also steel for the new Jefferson Hotel in Birmingham. The Ingalls Iron Works has a large tonnage on Florida jobs. Wire, nails, bars, fencing, angles, sheets and plates are all in good demand. Structural shapes and bars are unchanged at 2.15c. to 2.25c., base Birmingham, and plates at 2.05c. to 2.15c.

Cast Iron Pipe.—All cast iron pressure pipe shops here are producing to the maximum, with shipments equal to production. No surplus stock is on hand. Quotations are still weak, around \$39 to \$40, Birmingham, on 6-in. and larger sizes, while business in hand and specifications in sight promise activity through remainder of year. The local water works company is preparing a budget of its needs for next 12 months, which will mean the purchase of a considerable tonnage of pipe in the home territory. The McWane Cast Iron Pipe Co. is building an addition to its plant.

Coke.—The market here is strong, and business booked and in sight warrants the belief that full operation of ovens will be necessary through remainder of year. Contract foundry coke brings \$5.50, Birmingham, and early delivery or spot coke \$6. Steady shipments are being made into the St. Louis, Kansas City and Chicago territories, and recently deliveries have been made as far north as Milwaukee. The Alabama By-Products Corporation has 100 beehive ovens in operation to meet the demand of certain foundries which insist on beehive coke. Twenty-seven other beehive ovens are on pitch coke.

Old Material.—Continued dullness is noted in the market. Apparently the only scrap that is being purchased is a little cast.

We quote per gross ton, f.o.b. Birmingham district yards, as follows:

Cast iron boringa, chemical	\$15.00 to \$16.00
Heavy melting steel	12.00 to 13.00
Railroad wrought	12.00 to 13.00
Steel axles	17.00 to 18.00
Iron axles	17.00 to 18.00
Steel rails	12.00 to 14.00
No. 1 cast	16.50 to 17.00
Tramcar wheels	16.00 to 17.00
Carwheels	16.00 to 16.50
Stove plate	14.00 to 14.50
Machine shop turnings	7.50 to 8.00
Cast iron boringa	7.50 to 8.00
Rails for rolling	15.00 to 16.00

St. Louis

Lack of Railroad Car Orders Deters Buying of Pig Iron and Scrap

ST. LOUIS, Sept. 21.—The pig iron market was quiet during the last week, sales totaling only about 600 tons. Melters are showing more interest, however, than for several weeks, as is evidenced by inquiries, which include 1000 tons for a Kansas melter, 500 tons for a Quincy stove plant and 300 to 500 tons for a southern Missouri melter. A strike of enamels in the Belleville stove foundries is one deterrent factor, and failure of railroads to buy cars is another.

We quote delivered consumers' yards, St. Louis, as follows, having added to furnace prices, \$2.16 freight from Chicago, \$4.42 from Birmingham, all rail, and 81c. average switching charge from Granite City:

Northern fdy., all. 1.75 to 2.25...	\$22.16
Northern malleable, all. 1.75 to 2.25	23.16
Basic	23.16
Southern fdy., all. 1.75 to 2.25	\$24.42 to 25.42
Granite City iron, all. 1.75 to 2.25	22.81 to 23.31

Coke.—A fair demand for foundry coke is reported, and there is a better movement of domestic grades than was expected at this time. There is no change in prices.

Finished Iron and Steel.—A survey of the railroads centering in St. Louis reveals that all will be in the market for rails for 1927 and that formal inquiries will be issued probably next month. Warehouse business is reported to be better so far this month than last month or in September, 1925. Structural fabricators are busy, but there is a dearth of new projects. Orders from manufacturing consumers of steel continue small.

Old Material.—The market is weak, and prices on most items are lower. Some dealers are heavily stocked on prepared scrap, and there is no buying by consumers. As a result, dealers are pressing to sell material. Consumers have sufficient stocks for immediate needs, and they are still waiting for railroad car orders before making further purchases of scrap.

We quote dealers' prices f.o.b. consumers' works, St. Louis' industrial district and dealers' yards, as follows:

Per Gross Ton
Iron rails
Rails for rolling
Steel rails less than 3 ft
Relaying rails, 60 lb. and under
Relaying rails, 70 lb. and over
Cast iron carwheels
Heavy melting steel
Heavy shoveling steel
Frogs, switches and guards cut apart
Railroad springs
Heavy axle and tire turnings
No. 1 locomotive tires
Per Net Ton
Steel angle bars
Steel car axles
Iron car axles
Wrought iron bars and transoms
No. 1 railroad wrought
No. 2 railroad wrought
Cast iron borings
No. 1 busheling
No. 1 railroad cast
No. 1 machinery cast
Railroad malleable
Machine shop turnings
Bundled sheets

Warehouse Prices, f.o.b. St. Louis

Base per Lb.
Plates and structural shapes
Bars, mild steel or iron
Cold-finished rounds, shafting and screw stock
No. 24 black sheets
No. 10 blue annealed sheets
No. 24 galvanized sheets
Black corrugated sheets
Galvanized corrugated sheets
Structural rivets
Boiler rivets

Per Cent Off List
Tank rivets, $\frac{1}{2}$ -in. and smaller
Machine bolts
Carriage bolts
Lag screws
Hot-pressed nuts, square, blank or tapped, 3.25c. off per lb.
Hot-pressed nuts, hexagons, blank or tapped, 3.75c. off per lb.

Cincinnati

First Quarter Inquiries for Pig Iron— Pressing Demand for Roofing Sheets

CINCINNATI, Sept. 21.—While pig-iron sales have been small in the past week, interest has centered in several inquiries for first quarter delivery. The Muncie Malleable Iron Co., Muncie, Ind., is negotiating for 6000 to 10,000 tons of malleable, and the Globe Stove Co., Kokomo, Ind., is expected to buy 1000 tons of foundry iron. In addition, the Ohio Brass Co., Mansfield, Ohio, is asking for 800 to 1000 tons of malleable. It is understood that Lake furnaces are quoting low prices on this business, at least one furnace having named \$18.50, base furnace, for January and February delivery. Southern Ohio producers, on the other hand, realize that they have little chance to book these desirable tonnages so long as their northern Ohio competitors quote delivered prices of from \$1 to \$1.50 a ton under the Ironton figures. There has been no change in the prices of southern Ohio foundry iron. A few small orders have been taken at \$20, base furnace, but \$19.50 still can be done on attractive tonnages in highly competitive districts. Alabama iron is holding firm at \$21, base Birmingham, the Louisville & Nashville Railroad having purchased 500 tons on that basis. This carrier also bought 180 tons of charcoal iron. Sales of silvery iron have been confined to single carloads. Malleable iron remains at \$19 to \$19.50, base furnace, but demand is light.

Based on freight rates of \$3.69 from Birmingham and \$1.89 from Ironton, we quote f.o.b. Cincinnati:

Alabama fdy., sil. 1.75 to 2.25 (base)	\$24.69
Alabama fdy., sil. 2.25 to 2.75	25.19
Tennessee fdy., sil. 1.75 to 2.25	24.69
Southern Ohio silvery, 8 per cent	29.39
So. Ohio fdy., sil. 1.75 to 2.25	\$21.39 to 21.89
So. Ohio malleable	20.89

Finished Material.—In specifications and orders the first 20 days of September are about equal to the same period last month. While there is no tendency on the part of consumers to anticipate future requirements, the consistently good volume of business being placed each day has given a tone of strength to the market. Buyers are insistent upon prompt deliveries. Especially is this true of the roofing trade, which because of the unusually favorable weather has found itself short of material. The heavy movement of galvanized sheets has been an outstanding market feature during the past week. Fabricators in this territory have added to their comfortable bookings enough business to keep their plants engaged at the present rate of operations through the remainder of the year. Their favorable position, however, has not affected their policy of taking material only as they need it. Sheet mills are adhering strictly to schedules recently announced. Galvanized sheets are firm at 3.85c., base Pittsburgh, for No. 24 gage, while black sheets are selling at 3c., base Pittsburgh. Sales of blue annealed sheets have held up well, and prices are steady at 2.30c., base Pittsburgh. The wire market is still sluggish, but inquiries have increased appreciably.

Warehouse Prices, f.o.b. Cincinnati *

	Base per Lb.
Plates and structural shapes	3.40c.
Bars, mild steel or iron	3.20c. to 3.30c.
Reinforcing bars	3.20c. to 3.30c.
Hoops	4.00c. to 4.25c.
Bands	3.95c.
Cold-finished rounds and hexagons	3.85c.
Squares	4.35c.
Open-hearth spring steel	4.75c. to 5.00c.
No. 24 black sheets	4.05c.
No. 10 blue annealed sheets	3.60c.
No. 24 galvanized sheets	4.90c.
Structural rivets	2.75c.
Small rivets . . . . .	.65 per cent off list
No. 9 annealed wire, per 100 lb	\$3.00
Common wire nails, base per keg	2.95
Cement coated nails, base per 100-lb. keg	3.15
Chain, per 100 lb	7.55
Net per 100 Ft.	
Lap welded steel boiler tubes, 2-in	\$18.00
4-in	38.00
Seamless steel boiler tubes, 2-in	19.00
4-in	39.00

Bars at 2c., base Pittsburgh, are in moderate demand. Specifications and orders for structural shapes at 2c., base Pittsburgh, reflect a healthy condition in the fabricating trade. Tank plates are moving well at 1.90c., base Pittsburgh. The Big Four railroad will take bids until Oct. 1 on steel axles, steel tubes and safe ends, common wire nails, woven wire fences and galvanized barbed wire for its fourth quarter requirements.

Reinforcing Bars.—Bids are being taken on approximately 500 tons for the new packing plant of E. Kahn & Sons, Cincinnati. Otherwise pending projects involve only small tonnages. Prices are unchanged, with new billet bars bringing 2c., base Pittsburgh, and rail steel bars 1.90c., mill.

Warehouse Business.—Increased demand for structural steel and bars has given impetus to the market. Jobbers estimate that September sales will parallel those in August, which was one of the best months of the year. Prices on all products in the Cincinnati metropolitan district are steady, but irregularities in common wire nails at river points continue.

Coke.—Specifications and orders for by-product foundry coke are running about 10 per cent ahead of those in August. Although shipments of by-product domestic coke are expected to show an increase of 20 per cent over those last month, the market is slightly easier than a week ago because of the warm weather. Prices on all grades of by-product coke probably will remain unchanged during October. A consumer in this territory is inquiring for 5000 tons of furnace coke, while the Louisville & Nashville Railroad has closed for 6000 tons of foundry coke.

Old Material.—Lack of buying by nearby steel plants has had a weakening effect upon the market. While mills are unwilling to make new purchases, they are taking moderate tonnages on contract. Railroad offerings the past week brought fairly good prices. Quotations on all items are unchanged.

We quote dealers' buying prices, f.o.b. cars, Cincinnati:

Per Gross Ton		
Heavy melting steel	\$14.00 to \$14.50	
Scrap rails for melting	13.50 to 14.00	
Short rails	19.00 to 19.50	
Relaying rails	27.00 to 27.50	
Rails for rolling	15.00 to 15.50	
Old carwheels	13.00 to 13.50	
No. 1 locomotive tires	18.00 to 18.50	
Railroad malleable	15.50 to 16.00	
Agricultural malleable	14.50 to 15.00	
Loose sheet clippings	8.50 to 9.00	
Champion bundled sheets	10.00 to 10.50	

Per Net Ton		
Cast iron borings	7.50 to 8.00	
Machine shop turnings	7.00 to 7.50	
No. 1 machinery cast	18.00 to 19.00	
No. 1 railroad cast	15.00 to 15.50	
Iron axles	21.00 to 21.50	
No. 1 railroad wrought	10.50 to 11.00	
Pipes and flues	9.00 to 9.50	
No. 1 busheling	10.50 to 11.00	
Mixed busheling	7.00 to 7.50	
Burnt cast	8.00 to 8.50	
Stove plate	10.50 to 11.00	
Brake shoes	11.00 to 11.50	

Reductions in Detroit Scrap

DETROIT, Sept. 20.—Signs of weakness have appeared in the scrap market in this district, with heavy melting and shoveling steel, borings and short turnings registering a decline of 25c. per ton during the past week. Mills and furnaces have not been showing an active interest in buying at this time in the face of a heavy production of scrap, and thus blast-furnace materials are depressed. Automotive production is on a high basis with the melt in the district about equal to the August schedule.

The following prices are quoted on a gross ton basis f.o.b. producers' yards, excepting stove plate, No. 1 machinery cast and automobile cast, which are quoted on a net ton basis:

Heavy melting and shoveling steel	\$13.00 to \$13.50
Borings and short turnings	9.25 to 9.75
Long turnings	9.25 to 9.75
No. 1 machinery cast	17.00 to 18.00
Automobile cast	20.50 to 21.50
Hydraulic compressed	12.50 to 13.00
Stove plate	13.50 to 14.50
No. 1 busheling	11.25 to 11.75
Sheet clippings	8.00 to 8.50
Flashings	10.75 to 11.25

Buffalo

Scrap Shipped by Water from Detroit— Pig Iron Demand Light

BUFFALO, Sept. 21.—Inquiry for pig iron is light and spasmodic. Two lots of foundry iron offered from the East total 1500 tons. Both call for delivery in the fourth quarter. Other inquiries include one for 400 tons and another for 200 to 300 tons for the fourth quarter. Both inquiries involve No. 2x and No. 1 iron. What inquiry there is, is mostly for the fourth quarter though a few feelers have been put out on iron for shipment next year. Furnaces report greater firmness on Buffalo iron in the East, and it is understood that the Port Henry and Troy furnaces, as well as another Eastern stack, have advanced prices 50c.

We quote prices per gross ton, f.o.b. Buffalo, as follows:

No. 2 plain fdy., sil.	1.75 to 2.25	\$19.00 to \$20.00
No. 2X foundry, sil.	2.25 to 2.75	19.50 to 20.50
No. 1X foundry, sil.	2.75 to 3.25	20.50 to 21.50
Malleable, sil. up to 2.25		20.00
Basic		19.00
Lake Superior charcoal		29.25

Finished Iron and Steel.—There has been a considerable pick-up in the business taken by structural fabricating plants. Two fair-sized jobs have been taken, both in the automobile sales building field and totaling over 400 tons, and a large amount of small tonnage has been entered. Reinforcing-bars business is active, and one local concern has booked 250 tons of road mesh. Mild-steel bars are active at 2.265c. to 2.365c., Buffalo, shapes at 2.265c., and plates at 2.165c. Plate business is heavier than it has been in some time. Wire demand is good, and sheet buying is in fair volume.

Old Material.—The purchase by a Buffalo mill of considerable tonnage of heavy melting steel and hydraulic compressed sheets in Detroit for shipment to Buffalo by boat is the feature of the market this week. Most of the first shipment is hydraulic compressed sheets. The price paid was not learned, but it is understood to be higher than the mill has been offering here. The transaction will affect the Pittsburgh and Youngstown markets considerably, and since the boat rate of freight is around \$1 against the \$3.65 for rail shipment and the facilities for loading in Detroit are very good, the purchase may be the forerunner of others. Heavy melting steel is quotable at \$16 to \$16.50, while \$18 to \$18.50 is the market on selected No. 1. Fairly active demand exists for stove plate and for No. 1 cast scrap, but beyond this there is little activity. The market is sagging, and only a few dealers have orders.

We quote prices per gross ton, f.o.b. Buffalo, as follows:

Heavy melting steel	\$16.00 to \$16.50
Selected No. 1 heavy melting steel	18.00 to 18.50
Low phosphorus	18.50 to 19.00
No. 1 railroad wrought	15.00 to 15.50
Carwheels	17.00 to 17.50
Machine shop turnings	10.50 to 11.00
Mixed borings and turnings	12.00 to 12.50
Cast iron borings	12.00 to 13.00
No. 1 busheling	17.00 to 17.50
Stove plate	15.25 to 15.50
Grate bars	14.00 to 14.50
Hand bundled sheets	12.00 to 12.50
Hydraulic compressed	17.00 to 17.50
No. 1 machinery cast	16.00 to 16.25
Railroad malleable	16.50 to 17.00
Iron axles	24.00 to 25.00
Steel axles	16.00 to 16.50
Drop forge flashings	18.75 to 19.25

Warehouse Prices, f.o.b. Buffalo

	Base per Lb.
Plates and structural shapes	2.40c.
Mild steel bars	2.30c.
Cold-finished shapes	4.45c.
Rounds	2.95c.
No. 24 black sheets	4.30c.
No. 16 blue annealed sheets	3.80c.
No. 24 galvanized sheets	5.15c.
Common wire nails, base per kg.	\$2.90
Black wire, base per 100 lb.	3.90

Boston

Pig Iron Sales Are Larger—Mystic Furnace to Blow in Monday

BOSTON, Sept. 21.—Pig iron sales in New England increased perceptibly the past week, aggregating 10,000 tons. They included 2000 tons of low silicon iron for a Bridgeport, Conn., foundry; approximately the same tonnage of Mystic iron for two points outside New England, besides sales in New England; 1000 tons each sold by New York State furnaces; 600 tons of No. 2 plain and No. 2X for a Worcester, Mass., foundry; 300 tons of low silicon Buffalo iron for a New Hampshire melter; and other sales ranging from carlots to 200 tons. New York State furnaces, as a rule, are adhering to base prices recently put into effect, although quotations of as low as \$19, furnace, for No. 1X, are still outstanding. Buffalo No. 2 plain sold at \$18, furnace, the past week, and at least one eastern Pennsylvania furnace made attractive prices on open inquiries for low silicon iron. It appears that prices on certain irons are not so firm as openly quoted base prices would indicate. Although some sales were for 1927 shipment, about 85 per cent of the iron sold was for fourth quarter delivery to melters heretofore considered covered for the remainder of the year. The New England melt is increasing, although slowly. The foundry outlook in Connecticut is especially encouraging. Final arrangements have been made by the Mystic Iron Works, Everett, Mass., to blow in its furnace about noon, Monday, Sept. 27.

We quote delivered prices on the basis of the latest sales as follows, having added \$3.65 freight from eastern Pennsylvania, \$4.91 from Buffalo, \$5.92 from Virginia, and \$9.60 from Alabama:

East. Penn., sil.	1.75 to 2.25	\$24.15 to \$24.65
East. Penn., sil.	2.25 to 2.75	24.65 to 25.15
Buffalo, sil.	1.75 to 2.25	22.91 to 23.91
Buffalo, sil.	2.25 to 2.75	23.41 to 24.41
Virginia, sil.	1.75 to 2.25	27.02 to 28.42
Virginia, sil.	2.25 to 2.75	28.42 to 28.92
Alabama, sil.	1.75 to 2.25	30.60
Alabama, sil.	2.25 to 2.75	31.10

Warehouse Business.—Warehouses quote No. 10 blue annealed sheets out of stock at \$2.30 per 100 lb., as heretofore. On the other hand, No. 28 galvanized sheets are quoted at \$6.30, an advance of 5c., and No. 28 black at \$5.35, an advance of 10c. Differentials on black and galvanized are now figured from a No. 24 instead of a No. 28 gage base. Old and new prices on black sheets per 100 lb. follow:

	Old Price	New Price
No. 21	\$5.05	\$5.05
No. 22	5.10	5.05
No. 23	5.10	5.05
No. 24	5.10	5.10
No. 25	5.15	5.20
No. 26	5.25	5.35
No. 28	5.45	5.60

These changes in sheet prices are the first made by local warehouses since Nov. 16, 1925. Iron and steel are moving out of warehouses freely but in small lots. Stocks are more or less broken, and warehouses are still given to the practice of borrowing from each other rather freely.

Warehouse Prices, f.o.b. Boston

	Base per Lb.
Soft steel bars and small shapes	3.265c.
Plats, hot-rolled	4.15c.
Reinforcing bars	3.265c. to 3.5c.
Iron bars—	
Refined	3.265c.
Best refined	4.60c.
Norway, rounds	6.60c.
Norway, squares and flats	7.10c.
Structural shapes—	
Angles and beams	3.365c.
Tees	3.365c.
Zees	3.465c.
Plates	3.365c.
Spring steel—	
Open-hearth	5.00c. to 10.90c.
Crucible	12.00c.
Tire steel	4.50c. to 4.75c.
Bands	4.015c. to 5.00c.
Hoop steel	5.50c. to 6.00c.
Cold-rolled steel—	
Rounds and hexagons	3.95c.
Squares and flats	4.45c.
Toe calk steel	5.00c.

Finished Steel.—Although prices on plates and shapes have not changed, the market for these products appears softer in view of the fact that mills are actively soliciting business. Steel fabricators report numerous small bookings at good prices, but comparatively few large jobs. The Boston Bridge Works is reported to be low bidder on 450 tons for an office building for the Central Trust Co., Cambridge, Mass., and the New England Structural Co. is low on 150 tons for a new roof for the Boston College library. These tonnages have not been awarded, however. Local reinforcing steel dealers are encountering stiff competition in Belgian bars, which are offered at \$8 to \$10 a ton under domestic steel.

Coke.—Both the New England Coal & Coke Co. and the Providence Gas Co. report a further increase in by-product foundry coke specifications against last-half contracts on a basis of \$12, delivered, within a \$3.10 freight rate zone. Compared with prevailing bituminous coal prices, by-product coke prices are decidedly stable. Low volatile bituminous coal is now \$6.75 a ton, alongside docks Boston, an advance of \$1.40 a ton within two months and 15c. the past week. Materially low temperatures, with frosts, have caused retail dealers to start stocking domestic coke. As a result, New England by-product coke ovens are busier than they have been in several months.

Imports.—Due to the recent activity of furnaces east of Buffalo and to the agitation against dumping of foreign material, pig iron imports here have dropped to a minimum. For the first 15 days of September pig iron imports at Boston amounted to 320 tons, all of which came from Rotterdam. The Mystic Iron Works in that period received 10,112 tons of ore from Newfoundland. Other foreign receipts included 5108 tons of German rails and 40,100 German tie plates.

Old Material.—Sales have fallen off sharply. Most contracts with Pennsylvania steel mills have been filled, and as new offers for material are not being held open, prices are weak and uncertain. Prices on material used by the steel mills average 25c. to 50c. a ton lower than a week ago. For heavy melting steel, \$12, on cars shipping points, is the very best local dealers can do, and most of them will not offer more than \$11.50 to \$11.60. Early the past week \$12, on cars, was paid for chemical borings, but today \$11 is the going offer, with some offers at \$10.35 to \$10.50. For skeleton for Pennsylvania delivery, \$9.50 is now the outside price offered, although \$10 is still being paid for Worcester, Mass., shipment. Most offers, however, are at less than \$9.50. There is practically no market for specification pipe, railroad wrought and rails for rerolling. Shipments to New England consumers outside of Worcester, Mass., are down to a minimum.

The following prices are for gross-ton lots delivered consuming points:

Textile cast	\$18.50 to \$19.00
No. 1 machinery cast	18.00 to 18.50
No. 2 machinery cast	16.00 to 16.50
Stove plate	13.00 to 13.50
Railroad malleable	19.50 to 20.00

The following prices are offered per gross-ton lots, f.o.b. Boston rate shipping points:

No. 1 heavy melting steel	\$11.50 to \$12.00
No. 1 railroad wrought	12.50 to 13.00
No. 1 yard wrought	11.25 to 11.50
Wrought pipe (1 in. in diameter, over 2 ft. long)	10.50 to 11.00
Machine shop turnings	8.50 to 9.00
Cast iron borings, chemical	10.50 to 11.00
Cast iron borings, rolling mill	9.00 to 9.50
Blast furnace borings and turnings	8.00 to 8.50
Forged scrap	9.00 to 9.50
Bundled skeleton, long	9.00 to 9.50
Forged flashings	9.00 to 9.50
Bundled cotton ties, long	8.50 to 9.00
Bundled cotton ties, short	8.50 to 9.00
Shafting	16.50 to 17.00
Street car axles	16.50
Rails for rerolling	12.50 to 13.00
Scrap rails	11.50 to 12.00

Joseph Hyman & Sons have moved into a new warehouse they have built on Tioga, Almond and Livingston Streets, Philadelphia. Three overhead traveling cranes are included in the equipment and a railroad siding runs into the works. The company overhauls and rebuilds power presses.

RAILROAD EQUIPMENT

Total Purchases of 2600 Cars Largest in Several Weeks—Orders for 41 Locomotives

Of the 2600 cars reported purchased this week, 2000 were placed by the American Refrigerator Transit Co. with three builders. Outstanding inquiry has been increased by authorization of the Chicago & North Western to purchase close to 2500 cars of various types, in addition to which small inquiries total more than 500 cars. The largest purchase of locomotives was by a South American railroad, which placed 28 with the Baldwin Locomotive Works. The New York Central closed on 12 switching engines.

The Pennsylvania Railroad has distributed orders among several car builders for a total of 3000 tons of fabricated steel parts for cars and will order an additional 500 tons.

The Great Northern is in the market for 500 steel underframes for cars.

The Shannopin Coal Co. (Jones & Laughlin Steel Corporation) has ordered 500 mine cars, divided equally between the Matt Car & Wheel Co. and the Pressed Steel Car Co.

Inquiries are expected shortly from the Illinois Central and Missouri Pacific for several thousand freight cars.

The New York Central has ordered 12 8-wheel switching locomotives from the American Locomotive Co.

The Birmingham Southern has ordered 4 switching locomotives from the American Locomotive Co.

The Baldwin Locomotive Works has taken an order for 28 locomotives for a railroad in South America.

The Palace Poultry Car Co. has placed 100 poultry cars with the Illinois Car & Mfg. Co.

The American Refrigerator Transit Co. has placed 2000 refrigerator cars as follows: 1000 with the American Car & Foundry Co., 500 with the General American Tank Car Co. and 500 with the Pressed Steel Car Co.

The Missouri-Kansas-Texas is in the market for 250 freight cars.

The Phillips Petroleum Co. is inquiring for 200 tank cars.

The Lion Oil Refining Co. will buy 150 8000-gal. tank cars.

The Chicago & North Western has authorized the purchase of 1000 automobile, 500 stock, 25 steel caboose, 250 ore, 100 gondola, 500 steel hopper, 100 flat and 2 special dump cars. The passenger equipment specified includes 100 steel coaches, 23 baggage and smoking cars, 10 baggage cars and the rebuilding of 35 steel passenger cars.

The United Timber & Lumber Co., U. & P. Bank Building, Memphis, Tenn., is inquiring for a standard gage industrial locomotive, Heisler type preferred.

The Wolf Creek Sand & Gravel Co., Delight, Ark., is inquiring for a 36-in. gage industrial locomotive, steam or gasoline-operated, and a number of 36-in. gage dump cars.

REINFORCING STEEL

Awards of 3550 Tons Include 1800 Tons for New York Subway Construction

Including 1800 tons for subway construction in New York awards of concrete reinforcing bars, as reported to THE IRON AGE in the last week, totaled 3550 tons. Nearly 3000 tons are included in projects pending of which 800 tons will be required for a wharf at Berkeley, Cal. Awards follow:

CENTRAL FALLS, R. I., 160 tons, school, La France Construction Co., general contractor, to Concrete Steel Co.

BROOKLYN, 1800 tons, subway construction, to Truscon Steel Co.

JERSEY CITY, N. J., 284 tons of spirals for the Seaboard Refrigeration Co., to Concrete Steel Co.

MILFORD, OHIO, 350 tons of rail steel, parish school to Joseph T. Ryerson & Son.

CHICAGO, 500 tons of rail steel, Flamingo Hotel, to Calumet Steel Co.

CHICAGO, 160 tons, Mark Twain Public School, to Joseph T. Ryerson & Son.

CHICAGO, 100 tons, building for the Northwestern Stove Repair Co., to Jones & Laughlin Steel Corporation.

EAST CHICAGO, IND., 100 tons of rail steel, bank building to Olney J. Dean & Co.

CHICAGO, 500 tons, warehouse for Peck & Hill Co.; general contractor, Standard Concrete Construction Co.

ST. LOUIS, 100 tons, Union News Co. building at Fourteenth and Morgan Streets, to Laclede Steel Co.

Reinforcing Bars Pending

Inquiries for reinforcing steel bars include the following:

BOSTON, 400 tons, garage.

CINCINNATI, 500 tons, buildings for E. Kahn & Sons.

CINCINNATI, 150 tons, Chamber of Commerce, general contract to Hodges Construction Co., Cincinnati.

CHICAGO, 120 tons, building at 180 West Washington Street; Hyland & Course, architects.

ST. LOUIS, 200 tons, addition to service station of Vesper-Buick Auto Co., Laclede and Vandeventer Avenues.

SAN MATEO, CAL., 115 tons, Union high school; bids Sept. 30.

RICHMOND, CAL., 300 tons, Richmond high school; bids Oct. 25.

RICHMOND, 400 tons, factory for the Standard Sanitary Mfg. Co.; bids in.

SAN FRANCISCO, 300 tons, building for the Daily News Publishing Co.

BERKELEY, CAL., 800 tons, wharf for the Golden Gate Ferry Co.; San Francisco Bridge Co. low bidder on general contract.

FABRICATED STRUCTURAL STEEL

Inquiry For Fabricated Steel Increases With 34,000 Tons—Awards Are Smaller

Awards during the past week of close to 27,000 tons represent a slight decline from the recent average but new inquiry for more than 34,000 tons is well up to the best weeks of the year. With a few exceptions most of the purchases and many of the inquiries are for lots of less than 1000 tons. One of the larger awards was 4500 tons for a building in Detroit. The outstanding inquiry of the week was 9600 tons for subway construction in New York. Pipe lines projected for Ellensburg, Wash., and Los Angeles will require 6000 and 7250 tons of steel respectively, but bids have not yet been requested.

NEW YORK, 4500 tons in the following jobs reported to the Structural Steel Board of Trade: Mercantile building, 1 East Fifty-fifth Street, to Shoemaker Bridge Co., and Central Branch, Y. W. C. A., State Street, Atlantic and Third Avenues, Brooklyn, to Hay Foundry & Iron Works.

NEW YORK, 250 tons, apartment building, Gun Hill Road and Decatur Avenue, to D. Voepel Iron Works.

NEW YORK, 200 tons, apartment building, 184-188 East Ninety-second Street, to Alpha Iron Works.

NEW YORK, 400 tons, apartment building, 990 Fifth Avenue, to Bethlehem Fabricators, Inc.

NEW YORK, 350 tons, apartment building, 104th Street and West End Avenue, to Easton Structural Steel Co.

NEW YORK, 200 tons, for subway work, to American Bridge Co.

NEW YORK, 1600 tons, apartment hotel on West Fifty-ninth Street, to Harris Structural Steel Co.

NEW YORK, 1300 tons, theater and office building on West Fifty-fourth Street, to Harris Structural Steel Co.

BROOKLYN, 3000 tons, apartment building on Eastern Parkway, to A. E. Norton, Inc.

MASPETH, L. I., 200 tons, factory building, to Brooklyn Iron Works.

PENNSYLVANIA RAILROAD, 125 tons, bridge, to American Bridge Co.

PENNSYLVANIA RAILROAD, 250 tons, for towers for electrification of road between Philadelphia and Wilmington, Del., to Belmont Iron Works.

ST. BERNARD, OHIO, St. Bernard Mfg. Co., 150 tons, foundry building, to Fort Pitt Bridge Works.

ERIE RAILROAD, 225 tons, bridge at Paterson, N. J., to Phoenix Bridge Co.

ERIE RAILROAD, 125 tons, bridge, to American Bridge Co.

NORFOLK & WESTERN RAILROAD, 425 tons, bridge, to Virginia Bridge & Iron Co.

CONOWINGO, MD., 900 tons, work for Susquehanna Power Co., to Newport News Dry Dock & Shipbuilding Co.

STATE OF GEORGIA, 200 tons, highway bridge, to Roanoke Bridge Co.

CHEROKEE BLUFF, ALA., 800 tons, bridge over Martin Dam on Tallapoosa River, to Virginia Bridge & Iron Co.

LOUISVILLE, 350 tons, addition to power house for Bylesby Engineering & Management Corporation, to Louisville Bridge Co.

ASHLAND, KY., 160 tons, mill building, American Rolling Mill Co., to Jones & Laughlin Steel Corporation.

COVINGTON, KY., 150 tons for paper mill, to Pittsburgh Bridge & Iron Co.

PITTSBURGH, 575 tons, four river barges for Pittsburgh Plate Glass Co., to Dravor Contracting Co., Pittsburgh.

BUFFALO, Pierce-Arrow Motor Sales building, 270 tons, to R. S. McMannus Steel Construction Co.

BUFFALO, Gibson Motor Sales Co. building, 150 tons, to R. S. McMannus Steel Construction Co.

DETROIT, 4500 tons, Barium Building, to Russel Wheel & Foundry Co.

STATE OF ILLINOIS, 3600 tons, two bridges, to Illinois Steel Bridge Co., Jacksonville, Ill.

URBANA, ILL., 450 tons, addition to library, University of Illinois, to Mississippi Valley Structural Steel Co.

MINNEAPOLIS, 225 tons, addition to Institute of Fine Arts, to Crown Iron Works.

DAVIS, CAL., 200 tons, engineering building for the University of California, to Pacific Coast Engineering Co.

VALLEJO, CAL., 225 tons, two toll bridges on the Vallejo-Sears Point Highway, to Pacific Rolling Mill Co., San Francisco.

Structural Projects Pending

Inquiries for fabricated steel work include the following:

BOSTON, 1500 tons, Charles River bridge, bids being taken by Metropolitan District Commissioners.

BOSTON, 220 tons, New York, New Haven & Hartford Railroad bridge at Pope's Hill, Dorchester.

BOSTON, 150 tons, Boston College, Library roof.

CAMBRIDGE, MASS., 125 tons, salesroom and show room, Harvard College.

NEW YORK, 9600 tons, for subway construction, divided as follows: Section 1, route 104, 5500 tons; section 2, route 105, 1000 tons; section 2, route 104, 2700 tons; section 3, route 104, 400 tons.

EDGEWATER, N. J., 500 tons, building for Spencer Kellogg & Sons.

PHILADELPHIA, 2600 tons, previously reported as 400 tons, Fern Rock shops for Philadelphia subway system.

PHILADELPHIA, 350 tons, two municipal bridges.

MIAMI, FLA., 400 tons, Paramount theater building.

NORFOLK & WESTERN RAILROAD, 200 tons, bridges.

LOUISVILLE, 600 tons, bear-trap leaves for Ohio River dams; Nashville Bridge Co., low bidder.

CINCINNATI, 200 tons, buildings for E. Kahn & Sons.

DAYTON, OHIO, 200 tons, building for McCall Publishing Co.

CHICAGO, 500 tons, gas holder for Illinois Light & Power Co.

CLEVELAND, 200 tons, plant additions for Fisher Body Co.

FOSTORIA, OHIO, tonnage unstated, several buildings for National Carbon Co.

LYONS, ILL., 235 tons, township high school; Midland Structural Steel Co., Chicago, low bidder.

ST. LOUIS, 900 tons, 6 barges for United States Engineers; American Bridge Co., low bidder.

LA MESA, CAL., 500 tons, pipe line for the Lemon Grove and Spring Valley Irrigation District; bids Oct. 1.

FRESNO, CAL., 200 to 300 tons, crane runway for the Yosemite Portland Cement Co.

LOS ANGELES, 7250 tons, pipe line for the County Sanitary District, Los Angeles County; formal inquiry not yet issued.

LOS ANGELES, 1000 tons, for a penstock power house for the Southern California Edison Co.; formal inquiry not yet issued.

SAN FRANCISCO, 400 tons, apartment building on Chestnut Street.

ELLENBURGH, WASH., 6000 tons, pipe line for Yakima Irrigation District; bids to be called soon.

PORTLAND, ORE., 192 tons, bridge over Pistol River on the Roosevelt Coast Highway; bids Sept. 28, State Highway Commission, Portland.

MANILA, P. I., 400 tons, highway bridge.

NON-FERROUS METAL MARKETS

The
Week's
Prices

Cents per Pound
for
Early Delivery

	Sept. 21	Sept. 20	Sept. 18	Sept. 17	Sept. 16	Sept. 15
Lake copper, New York...	14.50	14.50	14.50	14.50	14.50	14.50
Electrolytic copper, N. Y.*	14.05	14.05	14.05	14.05	14.05	14.05
Straits tin, spot, New York..	69.87½	70.00		70.25	71.05	69.87½
Lead, New York.....	8.75	8.75	8.75	8.75	8.75	8.75
Lead, St. Louis.....	8.50	8.50	8.50	8.50	8.50	8.50
Zinc, New York.....	7.80	7.80	7.80	7.80	7.80	7.80
Zinc, St. Louis.....	7.45	7.45	7.45	7.45	7.45	7.45

*Refinery quotation; delivered price ¼ c. higher.

NEW YORK, Sept. 21.—The markets continue quiet with the exception of tin, in which there has been an active week with high prices. Copper is fairly steady in price, but there is no important buying. Lead and zinc are quiet. Antimony is weaker.

Copper.—Buyers are showing very little interest in copper, although it is known that much copper is yet to be bought for October and later delivery. The ruling price for electrolytic copper is 14.30c., delivered in the Connecticut Valley, or 14.05c., f.o.b. refinery, and quotations have remained at that level throughout the week. One sale of 1,000,000 lb. is reported, but otherwise sales have been in small lots.

Tin.—An active week in the tin market carried prices to the highest levels since the war, and there were sales up to Saturday of about 1500 tons, with about 200 tons additional on Monday. On the 16th sales were made at 71c. and 71.12½c. per lb., a new high record. Consumers were active buyers, and there was also considerable trading among dealers. Most of the sales were for September-October, but there was good inquiry for November-December. When prices reached their peak there were more liberal offerings by small dealers and some out-of-town dealers, and the average price on the 17th was 70.25c. There has been further slight weakening, the price today being 69.87½c. Arrivals up to Saturday were 3165 tons for the month, and all of it has gone to consumers. The active demand for tin plate and the increasing use of tin in the auto-

mobile industry in the manufacture of bearing metals accounts in large measure for the present strong situation. London prices today were £311 10s. for spot standard, £302 for future standard, £319 10s. for spot Straits. The Singapore price was £308 10s.

Lead.—There is little to say about lead, the market remaining quiet with prices unchanged. The leading interest continues to quote 8.75c., New York, and the St. Louis price remains at 8.50c.

Zinc.—A fairly good demand for zinc comes from the galvanizers, but there are no new developments of interest. For prompt delivery 7.47½c. per lb., St. Louis, has been obtained, but generally the market is quotable at 7.45c., St. Louis, and 7.80c., New York.

Antimony.—This metal is weaker, with 15.50c., duty paid, New York, now freely quoted for spot shipments and 14.50c. for future.

Nickel.—Ingot nickel in wholesale lots is quoted at 35c. with shot nickel at 36c. per lb. Electrolytic nickel is quoted at 39c.

Aluminum.—Virgin metal, 98 to 99 per cent pure, is quoted at 27c. to 28c. per lb., delivered.

Non-Ferrous Metals At Chicago

SEPT. 21.—The demand for copper is steady, and it is quoted at 14.60c. Tin has advanced 2½c., but dealers believe that there are indications of selling pressure. Lead is easier, and zinc has advanced slightly. The old metals are quiet.

We quote, in carload lots, Lake copper, 14.60c.; tin, 71.50c.; lead, 8.60c.; zinc, 7.55c.; in less than carload lots, antimony, 17.50c. On old metals we quote copper wire, crucible shapes and copper clips, 10.75c.; copper bottoms, 9.75c.; red brass, 9.25c.; yellow brass, 8c.; lead pipe, 7.50c.; zinc, 5c.; pewter, No. 1, 35c.; tin foil, 43.50c.; block tin, 52c.; aluminum, 17.75c.; all being dealers' prices for less than carload lots.

Metals from New York Warehouse

Delivered Prices per Lb.

Tin, Straits pig.....	71.50c. to 72.50c.
Tin, bar	72.00c. to 72.50c.
Copper, Lake	15.50c.
Copper, electrolytic	15.25c.
Copper, casting	14.75c.
Zinc, slab	8.50c. to 9.00c.
Lead, American pig	9.25c. to 9.75c.
Lead, bar	11.50c. to 12.50c.
Antimony, Asiatic	18.00c. to 19.00c.
Aluminum, No. 1 ingot for remelting (guaranteed over 99 per cent pure)	30.00c. to 30.50c.
Babbitt metal, commercial grade	25.00c. to 35.00c.
Solder, ½ and ¾	42.00c. to 43.00c.

Metals from Cleveland Warehouse

Delivered Prices per Lb.

Tin, Straits pig.....	75.50c.
Tin, bar	77.50c.
Copper, Lake	15.00c.
Copper, electrolytic	15.00c.
Copper, casting	14.00c.
Zinc, slab	8.50c.
Lead, American pig	9.60c.
Antimony, Asiatic	20.50c.
Lead, bar	11.50c.
Babbitt metal, medium grade	22.50c.
Babbitt metal, high grade	80.50c.
Solder, ½ and ¾	45.00c.

Roled Metals from New York or Cleveland Warehouse

Delivered Prices, Base per Lb.

Sheets—

High brass	19.37½c. to 20.37½c.
Copper, hot rolled	23.00c. to 24.00c.
Copper, cold rolled, 14 oz. and heavier	25.25c. to 26.25c.

Seamless Tubes—

Brass	24.25c. to 25.25c.
Copper	25.00c. to 26.00c.

Brazed Brass Tubes

27.37½c. to 28.37½c.

Brass Rods

17.12½c. to 18.12½c.

From New York Warehouse

Delivered Prices, Base per Lb.

Zinc sheets (No. 9), casks	13.00c. to 13.25c.
Zinc sheets, open	13.50c. to 13.75c.

Non-Ferrous Rolled Products

Mill prices on bronze, brass and copper products have not changed since Aug. 8. Zinc sheets and lead full sheets continue to hold to the changes of July 20 and 26 respectively.

On Copper and Brass Products, Freight up to 75c. Per 100 Lb. Allowed on Shipments of 500 Lb. or Over

Sheets—	
High brass	19.37½c.
Copper, hot rolled	23.00c.
Zinc	11.75c.

Seamless Tubes—

High brass	24.25c.
Copper	25.00c.

Rods—

High brass	17.12½c.
Naval brass	19.37½c.

Wire—

Copper	16.37½c.
High brass	19.87½c.

Copper in Rolls

21.87½c.

Brazed Brass Tubing

27.37½c.

Aluminum Products in Ton Lots

The carload freight rate is allowed to destinations east of the Mississippi River and also allowed to St. Louis on shipments to destinations west of that river.

Sheets, 0 to 10 gage, 2 to 30 in. wide..... 37.50c.

Tubes, base 48.00c.

Machine rods 34.00c.

Rolled Metals, f.o.b. Chicago Warehouse

(Prices Cover Trucking to Customers' Doors in City Limits)

Sheets—	Base per Lb.
High brass	19 1/2c. to 20 1/2c.
Copper, hot rolled	23c.
Copper, cold rolled, 14 oz. and heavier	25 1/4c.
Zinc	12.25c.
Lead, wide	11.25c.
<i>Seamless Tubes—</i>	
Brass	24 1/4c.
Copper	25c.
Brazed Brass Tubes	27 1/2c.
Brass Rods	17 1/2c.

ELECTROCHEMISTS' MEETING**To Discuss Furnace Refractories and Corrosion of Iron at Washington**

The American Electrochemical Society will hold its fiftieth national meeting at Hotel Washington, Washington, Oct. 7, 8 and 9, as stated in these columns July 15. A symposium on "Materials for Extreme Conditions in the Electrochemical Industries," is scheduled for Thursday morning, Oct. 8, in charge of Dr. H. W. Gillett, Bureau of Standards.

The first paper of the symposium will be by Dr. H. J. French, senior metallurgist, Bureau of Standards, who will discuss the principal characteristics and typical applications of metals used industrially to resist high temperatures or corrosion. How the high-chromium alloys may be welded in difficult parts of apparatus will be discussed by Stanley M. Norwood, research engineer of the Union Carbide & Carbon Co. Dr. J. G. Thompson will report the findings of the Fixed Nitrogen Research Laboratory at Washington and will offer recommendations as to the best materials for the nitrogen fixation industry. Tests of the Carborundum Co., Niagara Falls, during the last five years on thermal insulation of electric furnaces will be reported on by Dr. M. L. Hartmann and O. B. Westmont. F. A. J. Fitzgerald, electric furnace engineer, Niagara Falls, will present a communication on recrystallized carborundum, or silicon carbide.

The second half of the symposium will be devoted to specialized refractories. Max Unger, General Electric Co., Pittsfield works, inventor of the General Electric induction furnace, will describe at length his researches that led up to the solving of a difficult refractory problem. G. E. Merritt, Bureau of Standards, will report on the thermal expansion of refractory fused oxides, such as magnesium oxide, silicon oxide, etc. The properties of fused quartz will be discussed by W. W. Winship, manager of the Thermal Syndicate. The tendency on the part of metals to take up impurities out of the linings has been investigated by the Bureau of Standards and the results are to be discussed by Louis Jordan, A. A. Peterson and L. H. Phelps.

The Friday morning session will be devoted to papers on electrodeposition. G. Prescott Fuller, engineer of the new electrolytic iron plant at Niagara Falls, will describe the new process and product.

The corrosion of iron will be dealt with in a paper by Clayton M. Hoff, Grasselli Chemical Co., Cleveland, who will describe the new process of cadmium coating steel for rust proofing. The passivity and corrosion of iron will be discussed by Leon McCulloch, Westinghouse Electric & Mfg. Co. "Voltage Studies in Copper Refining Cells" is the title of a paper by Colin G. Fink and C. A. Philipp. A paper by J. D. Edwards and C. S. Taylor is on "The Electrical Resistivity of Aluminum-Calcium Alloys." The last session of the meeting, Saturday morning, will be devoted to organic electrochemistry.

Among the social features of the program is a visit to the government laboratories. On Thursday evening there will be an informal dinner at which Prof. W. D. Bancroft, Cornell University, will discourse on "The Ramifications of a Research Problem." The formal address of the convention will be delivered by Dr. Charles Greeley Abbot, director of the Smithsonian

Old Metals, Per Pound, New York

The buying prices represent what large dealers are paying for miscellaneous lots from the smaller accumulators, and the selling prices are those charged consumers after the metal has been properly prepared for their uses.

	Dealers' Buying Prices	Dealers' Selling Prices
Copper, heavy crucible	12.00c.	12.50c.
Copper, heavy and wire	11.75c.	12.50c.
Copper, light and bottoms	9.75c.	11.25c.
Brass, heavy	7.25c.	9.00c.
Brass, light	6.25c.	8.00c.
Heavy machine composition	8.75c.	10.125c.
No. 1 yellow brass turnings	8.50c.	9.25c.
No. 1 red brass or composition turnings	8.25c.	9.25c.
Lead, heavy	7.50c.	8.00c.
Lead, tea	5.75c.	6.50c.
Zinc	4.25c.	4.75c.
Sheet aluminum	17.00c.	19.00c.
Cast aluminum	17.00c.	19.00c.

Observatory, at the National Academy of Sciences on Friday evening, Oct. 8. The title of Dr. Abbot's address is "Solar Radiation." At the same meeting, honorary membership in the American Electrochemical Society will be officially bestowed on Dr. Edward Weston, internationally known for his standard cell. It was Dr. Weston who, in 1875, established in Newark, N. J., the first factory in America devoted exclusively to dynamo electric machines. He is also the inventor of the Weston measuring instruments and holds patents on electric lighting and other electrical devices.

Sheet Sales Topped Shipments Again Last Month

For the third consecutive month sales of sheets by independent manufacturers in August exceeded shipments, but the margin last month was a matter of only 1453 tons against 87,989 tons in July and 22,088 tons in June. Actually, August sales fell 68,959 tons behind those of July.

Production had a substantial increase in August as compared with the month before, the gain being 53,939 tons, while last month's shipments ran 17,577 tons ahead of those for July and 19,371 tons ahead of those of June. Total shipments for the eight months ended with August were 2,308,150 tons, a monthly average of 288,500 tons; in the same period last year the shipments totaled 2,011,373 tons, or a monthly average of 251,422 tons. The monthly average for this year, if maintained, would mean 3,462,000 tons for the year; last year's shipments, computed from the monthly reports of the National Association of Sheet and Tin Plate Manufacturers, were 3,193,872 tons. The August report, with comparisons, follows:

	1926	1925		
	August	July	June	August
No. of mills	710	710	710	699
Capacity per month	432,650	420,300	432,650	409,000
Per cent reporting	73.8	72.8	72.8	75.4
Sales	282,055	252,014	284,319	239,492
Production	293,703	239,764	268,448	270,212
Shipments	251,602	264,025	262,231	242,204
Unfilled orders	521,837	520,251	428,337	460,520
Unshipped stocks	102,874	107,931	121,288	76,101
Unsold stocks	44,988	46,031	55,140	38,476

Percentages to Capacity				
Sales	88.6	112.6	89.0	77.2
Production	92.0	77.3	84.0	87.2
Shipments	88.2	85.1	82.1	78.5
Unfilled orders	163.4	167.7	132.2	153.9
Unshipped stocks	32.2	34.8	38.0	24.6
Unsold stocks	14.1	14.8	17.3	12.4

The Hadfield-Penfield Steel Co., Bucyrus, Ohio, has been placed under receivership on the application of the United States Government, which instituted proceedings to protect a mortgage of \$1,596,254 which it held on the plants of the company. This mortgage was given during war time, when the government advanced money to the company to build a munitions plant. W. A. Riddell, president of the Frederick Iron & Steel Co., Frederick, Md., has been named receiver.

PERSONAL

John R. Blair, who, as announced in THE IRON AGE last week, was appointed manager of sales of Pittsburgh Steel Products Co., Pittsburgh, succeeding Charles F. Palmer, has been identified with that company since 1907. Mr. Blair was educated in the common schools in Scotland, and was with the Millom & Askam Hamatite Iron Co., in northwestern England from 1895 to 1902. Coming to Pittsburgh in 1902, he was in the purchasing department of the Pressed Steel Car Co. from that time until 1907. Since then he has been connected with the sales department of the Pittsburgh Steel Products Co., and its predecessor the Seamless Tube Co. of America, and for several years has been acting as assistant to the general manager of sales.



M. J. LONDON



J. R. BLAIR

M. J. London has been appointed manager of the Detroit office of Pittsburgh Steel Products Co., and will assume his duties there Oct. 1. He was formerly associated with the American Locomotive Co. in its automobile division at Providence, and has been connected with the Pittsburgh Steel Products Co. in various capacities since 1912. In 1920 he was placed in charge of the company's Detroit office, and in December, 1925, was called to the Pittsburgh office for special work there.

John E. Lose, superintendent Carrie Furnaces, Carnegie Steel Co., Rankin, Pa., will be the speaker at the next meeting of the Eastern States Blast Furnace and Coke Oven Association to be held Sept. 24, at the Colonial Country Club, Harrisburg, Pa. His subject will be "The Behavior of Large Hearth Furnaces."

J. K. B. Hare, formerly in charge of syndicate public utility sales in the Pittsburgh district office of the Westinghouse Electric & Mfg. Co., East Pittsburgh, has been placed in charge of the company's branch office recently opened at Columbus, Ohio. He has been with the Westinghouse company since 1912.

George A. Crocker, Jr., vice-president Rogers, Brown & Crocker Brothers, Inc., has returned from a European trip.

N. W. Storer has been appointed consulting railroad engineer in charge of the group handling of Diesel-electric locomotives and rail cars for the Westinghouse Electric & Mfg. Co., East Pittsburgh.

MacDonald C. Booze, formerly senior fellow of the American Refractories Institute's fellowship, Mellon Institute of Industrial Research, and now vice-president in charge of research and development for Charles Taylor Sons, Cincinnati, is convalescing from a serious illness.

J. E. MacArthur, formerly works manager for the Russell Motor Car Co., Inc., Buffalo, and previously connected with the Brown & Sharpe Mfg. Co., Providence, and the Pierce Arrow Motor Car Co., Buffalo, has been appointed general manager of the Abbott Ball Co., Hartford, Conn., maker of steel, brass and bronze bearing balls.

Ernest B. Talkes, formerly machine-shop superintendent in the Indiana Harbor Works of the Inland Steel Co., Chicago, has been made general master mechanic of the Indiana Harbor plant. He succeeds Frank J. Werner who has been appointed superintendent of the splice-bar and tie-plate department.

Arthur P. Skaer, Buffalo district manager for the Kalman Steel Co., Chicago, has been named head of a commission of three engineers, whose opinion the city of Buffalo will accept regarding the reliability of the construction work in its new filtration plant.

J. P. Boore, who has been in charge of the Detroit office of Pittsburgh Steel Products Co., since last December has been transferred to the home office as assistant to the manager of sales. Mr. Boore has been connected with the Pittsburgh Steel Products Co. since 1913. In 1916, he was placed in charge of scheduling the company's mills; in 1918 he was made assistant superintendent of the Monessen mill, and in 1919 was transferred to the Pittsburgh office in charge of production for both the Monessen and Allenport mills, in which capacity he served until he was sent to Detroit.

F. R. Palmer, metallurgist Carpenter Steel Co., Reading, Pa., addressed the September meeting of the Hartford Chapter, American Society for Steel Treating, his subject being "Heat Treatment of High-Speed Steel."

Arthur A. Fowler, president Rogers, Brown & Crocker Brothers, Inc., sailed for England on Sept. 22.

Clarence F. Bennett, president Stanley Works, New Britain, Conn., has returned from a trip to Europe.

F. N. Connet, Builders Iron Foundry, Providence, delivered a paper at the forty-fifth annual convention of the New England Water Works Association in Providence last week.

Major F. B. Williams, for the last seven years associated with the Walker & Pratt Mfg. Co., Watertown, Mass., has resigned his position as assistant superintendent and after Oct. 1 will be associated with the Curtis Publishing Co., Philadelphia. E. A. Stevens will succeed Mr. Williams in the Walker & Pratt company.

L. J. Drake, formerly president of the Galena Signal Oil Co., New York, has been elected president of the Union Tank Car Co., New York, to succeed E. C. Sicardi who retired recently.

Arthur Schaeffer, formerly Detroit district sales manager for the Central Steel Co., Massillon, Ohio, will continue in the same position for the newly formed Central Alloy Steel Corporation, Massillon. J. D. Jones, W. J. Laffrey and Arthur Schreiner, formerly in the Detroit office of the United Alloy Steel Corporation, Canton, Ohio, and G. G. Gries and J. S. Andrews, representatives in the same territory for the Central company, will continue as assistant sales managers in Detroit with headquarters at 2940 Book Building, Washington Boulevard and Grand River Avenue.

Herbert L. Hart, manager of the bolt and rivet department of the Inland Steel Co., Chicago, has returned to his desk after several months of illness.

P. A. Fransson, formerly engineer for the Winfield Electric Welding Machine Co., Warren, Ohio, has been made chief engineer for the Agnew Electric Welder

Co., Milford, Mich., and will have charge of the redesigning of a number of its machines.

William Hutton Blauvelt, consulting engineer, 120 Broadway, New York, has returned from Europe, where he made a survey of the by-product coking industries of Great Britain, Holland, France and Germany. He also investigated the newest developments in these countries in low temperature distillation of coal and hydrogenation processes.

G. A. White has severed his connection with the Otis Steel Co., Cleveland. He was assistant to R. H. Clarke, vice-president in charge of operations, and his duties included metallurgical work.

Lewis A. Way, who has been identified with the steel foundry industry for the past 26 years, has been elected president and general manager Sharon Foundry Co., Sharon, Pa., succeeding the late W. W. Shilling. For the past two years Mr. Way has been associated with the Mesta Machine Co. in its sales department. He started in the business in 1900 with the Duquesne Steel Foundry Co., Coraopolis, Pa., and in 1906 was appointed general superintendent, holding that position until 1917, when he resigned to become assistant to the president Lewis Foundry & Machine Co., Groveaton, Pa., in charge of production. Early in 1921 he returned to the Duquesne Steel Foundry Co. as general manager of sales and two years later he was elected vice-president in charge of operations. Mr. Way is a member of the American Foundrymen's Association and a former president of the Pittsburgh Foundrymen's Association, of which he is now a trustee.

OBITUARY

GEORGE I. ALDEN, chairman of the board of directors and one of the founders of the Norton Co., Worcester, Mass., died at his summer home in Princeton, Mass., Sept. 13, aged 83 years. His career was a distinguished one. For many years he was head of the department of steam and mechanical engineering at the Worcester Polytechnic Institute. He was a founder of the Plunger Elevator Co., which later was absorbed by the Otis Elevator Co. He was one of a group of five men to found the Norton Co., then the Norton Emery Wheel Co., his associates being the late Milton P. Higgins; the late Fred H. Daniels, a director and the chief engineer of the American Steel & Wire Co.; the



GEORGE I. ALDEN

late John Jeppson, and Charles L. Allen, now president of the company. He was a past vice-president of the American Society of Mechanical Engineers, and was a contributor to its proceedings.

Professor Alden was born in Templeton, Mass., April 22, 1843, a descendant of John and Priscilla Alden of Mayflower fame. After earning the required money, he entered the Lawrence Scientific School of Harvard University and graduated with honors in 1868. In 1891 Cornell University conferred upon him the degree of master mechanical engineer. This year he received the degree of doctor of engineering from Worcester Polytechnic Institute, and Washburn College at Topeka, Kan., founded by Ichabod Washburn, father of the American wire industry, conferred upon him the degree of doctor of laws.

Almost immediately upon leaving Harvard the young man went to Worcester as an instructor in the newly established Worcester County Institute of Industrial Science, as Worcester "Tech" was first called. For 28 years he remained head of his department, retiring only when large business interests compelled his whole attention. For a long time he was president of the Norton Co., retiring to become chairman of the board when increasing years demanded that he relinquish his more arduous labors. When the Norton Grinding Co. was formed to build the grinding machines designed by Charles H. Norton, Professor Alden became vitally interested, and devoted much time to the upbuilding of the business which eventually was absorbed into the Norton Co.

He was prominent in the councils of Worcester branch, National Metal Trades Association, and when he retired as its president the office of president emeritus was created for him, which he held at his death. He was vitally interested in the Worcester Boys' Trade School, which his friend and associate, Milton P. Higgins, had much to do with founding, and was the president of its board of trustees.

Professor Alden's will leaves \$50,000 to the Worcester Polytechnic Institute to create the Charles G. Thompson endowment fund, in memory of the first president of the institute, under whom Professor Alden served. Filed with the will were the papers establishing the George I. Alden trust, valued at \$3,000,000, the entire income from which eventually will be largely devoted to the cause of technical and industrial education.

The Worcester Polytechnic Institute, Worcester trade schools and the educational department of the Y. M. C. A. are suggested as beneficiaries, as are various Worcester charities. But the trustees will be free to employ the money as they may deem best. One-third of the income of the \$3,000,000, with some reservations, will be available immediately for these purposes. The income of two-thirds will go to members of the family during their lifetime and for some years afterward to appointees whom they are given the right to name. Paul B. Morgan, president and treasurer of the Morgan Construction Co., is one of the trustees.

WILLIAM S. LEE, vice-president E. D. Clapp Mfg. Co., Auburn, N. Y., died on Sept. 6, aged 76 years. He had been an employee of the organization continuously from July, 1868, and for the past seventeen years served as vice-president and secretary. Born in England, he came to this country when a youth and entered the employ of E. D. Clapp soon after reaching Auburn. His connection with the drop forging industry dates from its beginnings in the United States and his record for continuous service is an exceptional one, representing contacts with three generations of employees.

CHARLES F. LAGANKE, Cleveland manufacturer of special machinery, tools and dies, died suddenly Sept. 10, aged 62 years.

DR. AUGUSTE J. ROSSI, consulting chemist for the Titanium Alloy Mfg. Co. and the Titanium Pigment Co., Inc., both of Niagara Falls, N. Y., died Sept. 19 at his home in that city. Born in Paris in 1838, he was educated there and came to the United States when he was 20 years old. For a number of years he worked as a chemist in blast furnaces in the eastern part of the country. He was the discoverer of the process for the manufacture of titanium alloy and pigment and in 1916 received the Perkins medal for outstanding achievement in the chemical field. He had contributed many papers on titanium to technical journals and to the proceedings of engineering societies. A number of these dealt with the production of pig iron from titaniferous iron ores and Dr. Rossi devoted years of experiment to the problems of utilizing Adirondack deposits of these ores. He leaves three daughters, one of whom was the wife of the late J. B. Nau, a well-known metallurgical engineer of New York.

Continental Mills Advancing Prices

German Export Rebates Lower—British Post Strike Orders Large—Belgians Still Oppose Quotas in International Cartel

(By Cable)

LONDON, ENGLAND, Sept. 20.

CLEVELAND pig iron has been advanced 6d but prices are nominal as there is no iron in stock and practically none available for October. Increase in blast furnace operation is hampered by the high price of foreign fuel so that only six furnaces are in blast. Stocks of high-silicon hematite are moderate but there is no demand. Supplies of East Coast mixed are very low.

Steel is firm with some moderate domestic buying but export trade is slack owing to the uncertainty of shipments. Makers generally are well booked for many weeks ahead when production is resumed.

The continental markets are firm with British users of semi-finished clamoring for supplies which continue scarce. The Paris meeting of continental mills did not result in the establishment of an international cartel as a result of Belgian opposition. The Sambre Moselle

and Providence works were inclined to withdraw opposition to the established Belgian quota but Hainault was adamant. No further meeting has been arranged but it is reported that the French and German mills are demanding a Belgian decision by Sept. 22.

Tin plate is quiet, affected by the less favorable prospects for an early coal settlement. Although there is a fair volume of inquiry actual sales are restricted to stock tin plate, which is now 22s 6d to 23s, per base box. Large sizes are 21s 6d to 22s, per base box, and 20 x 14-in. plates with October delivery guaranteed are 21s 6d to 22s, per base box. Tin plate for post strike rolling is quoted at 20s 3d upward, all f.o.b. works port.

Galvanized sheets are firm with moderate sales of small lots, makers quoting November as the earliest delivery for No. 24 gage corrugated sheets in bundles. Black sheets are quiet but Japanese specifications have been advanced.

Prospect of Second Large Steel Merger in Germany

BERLIN, GERMANY, Sept. 9.—The possibility of forming a second large steel corporation in Germany is being openly discussed. Organized along the lines of the Vereinigte Stahlwerke, the new corporation might include such outside producers as Friedrich Krupp A. G., Essen; Haniel & Lueg, G.m.b.h., Dusseldorf; Hoesch Eisen und Stahlwerke, Dortmund; Peiner Walzwerk, Pein; Mannesmann Tube Co., Dusseldorf; Kloeckner & Co., Duisberg, and Wolff, Netter & Jacobi with plants in South Germany and Westphalia. Although intended as a combination to offset the large control of the United Steel Works in the syndicates, the suggested members of the proposed merger have few products in common. Such a combination will probably occur only if the United Steel Works extends its present control by further absorptions.

The new International Tubes Syndicate has established headquarters temporarily at Dusseldorf. The syndicate consists of five groups of mills, German,

Czechoslovakian, Polish mills with the Bismarck-schuette, French and Belgian mills and Hungarian. Hungary is represented by only one company, Manfred Weiss of Budapest. Efforts to include Italian and Spanish mills have been unsuccessful and the British with no domestic syndicate are also outsiders.

It is reported that negotiations will begin about the end of September directed toward including Austrian, Czechoslovakian and Hungarian producers in the International Steel Syndicate. The German Ingots Steel Syndicate will consider at its next meeting an application for membership from the Alpine Montan A. G. of Austria.

Luxemburg Price Advances Offset by Higher Wages, Freights and Fuel

LUXEMBURG, Sept. 12.—In recent months business has been considerably affected by the violent fluctuation of the French and Belgian exchange and a decline in business with Britain as a result of the coal strike. The prospect, however, of an international

British and Continental European prices per gross ton, except where otherwise stated, f.o.b. makers' works, with American equivalent figured at \$4.86 per £ as follows:

Durham coke, f.o.b..	£2 7 1/2	\$11.54
Bilbao Rubio oref..	1 0 to £1 0 1/2	4.86 to \$4.97
Cleveland No. 1 fdy.	4 15	23.09
Cleveland No. 3 fdy.	4 12 1/2	22.48
Cleveland No. 4 fdy.	4 11 1/2	22.23
Cleveland No. 4 forge	4 10	21.87
Cleveland basic (nom.)	3 15 and 3 15 1/2	18.23 and 18.35
East Coast mixed...	4 3	20.17
East Coast hematite.	4 3 1/2	20.29
Rails, 60 lb. and up	7 0 to 8 0	34.02 to 38.88
Billets	6 10 to 8 0	31.59 to 38.88
Ferromanganese ...	14 0	68.04
*Ferromanganese ...	14 0	68.04
Sheet and tin plate bars, Welsh	6 5	30.37
Tin plates, base box	1 0 1/2 to 1 3	4.92 to 5.59
Black sheets, Japanese specifications	15 5 to 15 10	74.12 to 75.33
Ship plates	7 10 to 8 0	1.62 to 1.73
Boiler plates	9 15 to 11 0	2.11 to 2.39
Tees	7 15 to 8 5	1.68 to 1.78
Channels	7 0 to 7 10	1.41 to 1.62
Beams	6 15 to 7 5	1.46 to 1.57
Round bars, % to 3 in.	7 12 1/2 to 8 2 1/2	1.65 to 1.76
Steel hoops	10 10 and 11 0*	2.28 and 2.39*
Black sheets, 24 gage	11 5 to 11 10	2.44 to 2.49
Galv. sheets, 24 gage	16 10 to 16 15	3.58 to 3.63
Cold rolled steel strip, 20 gage, nom.	18 0	3.91

*Export price.

†Ex-ship, Tees, nominal.

Continental Prices, All F.O.B. Channel Ports (Per Metric Ton)

Foundry pig iron : (a)			
Belgium	£3 13s.	to £3 14s.	\$17.74 to \$17.98
France	3 13	to 3 14	17.74 to 17.98
Luxemburg	3 13	to 3 14	17.74 to 17.98
Basic pig iron :			
Belgium	3 4	to 3 6	15.55 to 16.04
France	3 4	to 3 6	15.55 to 16.04
Luxemburg	3 4	to 3 6	15.55 to 16.04
Coke	0 18		4.37
Billets :			
Belgium	4 17 1/2	to 5 0	23.08 to 24.30
France	4 17 1/2	to 5 0	23.69 to 24.30
Merchant bars :			
Belgium	5 4	to 5 6	1.14 to 1.16
Luxemburg	5 4	to 5 6	1.14 to 1.16
France	5 4	to 5 6	1.14 to 1.16
Joists (beams) :			
Belgium	5 1	to 5 10	1.11 to 1.21
Luxemburg	5 1	to 5 10	1.11 to 1.21
France	5 1	to 5 10	1.11 to 1.21
Angles :			
Belgium	5 5		1.15
1/2-in. plates :			
Belgium	6 0	to 6 2 1/2	1.32 to 1.35
Germany	6 0	to 6 2 1/2	1.32 to 1.35
1/2-in. ship plates :			
Belgium	5 12 1/2	to 5 15	1.24 to 1.26
Luxemburg	5 12 1/2	to 5 15	1.24 to 1.26
Sheets, heavy :			
Belgium	6 3	to 6 4	1.33 to 1.34
Germany	6 3	to 6 4	1.33 to 1.34

(a) Nominal.

syndicate of steel producers has contributed to a general strengthening of prices and demand is improved. Some large tonnages are reported to have been placed recently by British consumers, the German mills having booked heavily of this business so that they are not in as good a position as the Luxemburg mills to make the prompt deliveries required. Export business, particularly to the Far East, has improved in recent weeks.

While prices have been successfully advanced to a higher level, any advantage to the mills is offset by increased wages, freight rates and cost of fuel and raw materials. Although business thus far in September has been small, prices are being maintained and for export Luxemburg mills are rather above the world market prices in some instances. Beams, for example, are quoted for export at about 6d. per ton higher price than the French or Belgian market. Bars are about 1s. per ton above the French and Belgian level.

Pig iron production in July was 211,279 metric tons with 38 out of a total of 44 furnaces in blast. Steel ingot output was 191,538 metric tons in July.

GERMAN BUSINESS IMPROVES

Coal Export at Pre-War Level—Ruhr Mills Quote Extended Delivery—Britain an Active Buyer

BERLIN, GERMANY, Sept. 9.—Improvement in the iron and steel markets continues, both domestic and export business having increased appreciably in the past fortnight. At the same time a moderate improvement in the engineering industry is reported. Producers in the Ruhr are apparently in a better position than those of other industrial districts. The total of unemployed in the Ruhr mills and coal mines has declined more rapidly than in other sections, and some rolling mills in the west report more difficulty in handling the large volume of export business than at any time in the past year or two. The steel syndicate, however, continues its output at 70 per cent of capacity.

The coal industry continues extremely active as a result of the British strike. The daily output of the Ruhr mines has been about 25 per cent higher than the April production. In the first four months of this year the average output was 1,150,000 tons a month. In May, with the British strike beginning to be effective, the total was 1,832,172 tons, and in June the production increased to 2,517,703 tons, with July at 3,640,247 tons. The average monthly exports of Germany in 1913 were 2,881,000 tons.

Following an inspection of British mines, the president of the mining department of the Federation of German Industries reports that only about 40 per cent are technically on a level with the good German mines, another 40 per cent are open to modernization and development, while the remaining 20 per cent are useless and should be closed. While favoring British and German cooperation on coal, he points out that there is small prospect of it, as the British have no domestic syndicate or other association with which to negotiate. Instead, he predicts severe competition in coal between the two countries.

The steel export market is active and quite firm, bars having advanced from about £4 16s. per metric ton, Antwerp, early in August to a current quotation of about £5 5s. per ton. Deliveries have been extended to about eight weeks and some western mills are refusing further business. Demand for structural steel is also good with South American markets, the Far East and India the principal purchasers. There is a better export business in wire rods and British and Japanese inquiry for bands is active. Belgian prices on bands, however, are still well under the German quotation. The sheet market has improved with the heavy gages up to £5 12s. 6d. and occasionally £6 per ton. There is also an active trade in the medium and thin gages. Although the German output is small, sales of light gage black sheets to Japan have been

large since the British strike. The British are placing orders in Germany for steel plates despite the usual British claim that the German product is inferior. Castings and ship building materials, usually bought in Germany, are being purchased in larger tonnages than usual.

The German wire syndicate has increased its prices by 10 marks per metric ton. The September rebates granted by the Ingots steel syndicate on material purchased by German manufacturers for conversion into export materials have been revised. The reductions for September represent the recent advances in "world market" prices, the rebates being intended to offset the difference between these and the German domestic market. The following table shows the rebates per metric ton, offered for September:

	Marks	£
Ingots	15	3.57
Blooms	15	3.57
Billets	15	3.57
Slabs	15	3.57
Structural shapes	25	5.95
Bars	25	5.95
Wire rods	21	5.00
Tubes, gas	55	13.09
Heavy sheets	30	7.14
Boiler plates	30	7.14
Medium sheets	12.5	2.98
Light sheets	15	3.57

a 10

centesimal

BELGIAN PRICES ADVANCE

Mills Well Booked With Orders Have Adopted Independent Attitude—Wages, Freight Rates and Fuel Higher

ANTWERP, BELGIUM, Sept. 9.—Continued improvement in demand and greater firmness of prices are still features of the iron and steel markets. Most mills are well booked with business and a number are practically out of the market for the present. Orders are small but this is attributed to the fact that the fall buying movement has not yet begun and that recent increases in price are undoubtedly causing some hesitation by buyers.

Export buyers continue to seek lower prices and ask concessions from original quotations, but the majority are placing orders in larger volume, apparently having concluded that the recent advance in prices will be maintained. With most mills offering three to four months delivery and demanding specifications at the time of the order, speculation is practically impossible. Producers are in a decidedly favorable position and with the prospect of still higher prices the market is rapidly turning from a buyers' to a sellers' market. A further increase of 5 per cent in wages has just been granted, railroad freight rates have been increased recently and a new advance of about 25 per cent is expected soon and higher coke and coal prices are further increasing costs of production.

Pig Iron.—Only small supplies of iron are available so that current business is of necessity confined to light buying. No. 3 phosphoric foundry continues at 600 to 610 fr. per metric ton to domestic consumers with sales to the United Kingdom at about £3 10s. per ton, f.o.b. Antwerp. Bessemer hematite is quoted at about 760 fr., f.o.b. Antwerp, which is too high to compete with the French export quotation of £3 16s. to £3 18s., f.o.b. port. Coke prices have been increased 15 fr. per ton above the August quotation.

Semi-Finished Material.—British buying of billets, blooms and slabs continues large but only small supplies are available for early delivery. Billets are quoted at £4 14s. to £4 16s. per ton, blooms up to £4 10s. and slabs £5 to £5 2s. per ton, all f.o.b. Antwerp.

Finished Material.—Prices are strong but in many instances export buyers have not yet accepted these new prices and are still seeking a lower market. Deliveries extend to as much as three or four months, so that buyers are beginning to see but little prospect of lower prices. Bars are still being purchased at £5 per ton, f.o.b. Antwerp (about \$24.50), but mills are rapidly advancing the market to a basis of £5 1s. to £5 2s. (\$24.85) per metric ton, Antwerp. Luxemburg makers are quoting up to £5 2s. 6d. and £5 3s. per ton

on bars for export. Beams are held at £5 (\$24.50) per ton, channels, £5 2s. (\$25.00) per ton, corrugated bars at £5 12s. (\$27.45) per ton and wire rods at £5 10s. (\$26.95) per ton, all f. o. b. Antwerp. The domestic market for finished steel products is slow to recover but quotations are once again on a franc basis, rendering domestic purchase much easier than formerly.

Iron and Steel Institute Readmits German Members

LONDON, Sept. 6.—During the late war, the British scientific and technical societies, with one or two notable exceptions, erased from their rolls the names of all members of German or Austrian nationality. The Iron and Steel Institute has now taken an important step in the removal of a ban, so far as concerns itself, which has existed so long, by reelecting Dr. Emil Schrodter, late secretary of the Verein Deutscher Eisenhuttenleute, an honorary member. Doctor Schrodter, who is highly esteemed in England, would have been present at the meetings of the institute in Stockholm, where he would have been assured of a cordial welcome, but ill-health prevented his attendance.

Swedish Steel Industry Affected by British Strike and Low Franc

STOCKHOLM, SWEDEN, Sept. 5.—The iron and steel industry is still depressed and the iron ore market which was active throughout 1925 has been much quieter this year. Because of the late opening to navigation of the port of Lulea, shipments of ore in January to June totaled only 2,900,000 metric tons compared with 4,100,000 tons in the same period of 1925. The British coal strike has added to the depression of the iron and steel industry, successfully checking British purchases of Swedish iron. "Exchange dumping" by French and Belgian sellers is claimed by Swedish mills.

Pig iron production in the first half of this year showed a slight increase with 231,400 tons compared with 224,100 tons for the first half of 1925. Bessemer steel production also increased with 37,600 tons compared with 27,600 tons in the first half of 1925. Open-hearth production, however, declined from 186,200 tons in 1925 to 174,600 tons this year. Output of rolled products showed a slight increase with 160,600 tons the first half of this year, compared with 159,800 tons in the first half of 1925.

Imports of iron and steel have increased and exports decreased. In the first half of this year 155,501 tons of iron and steel was imported compared with 127,689 tons in the first half of 1925 and exports totaled 91,682 tons compared with 125,193 in the first six months of 1925. Iron ore production declined from 3,869,121 metric tons in the first half of 1925 to 3,163,928 tons in the first half of this year.

International Steel Syndicate May Base Prices on American Market

HAMBURG, GERMANY, Aug. 26.—Negotiations among Belgian mills, which have recently been held in Brussels, are believed in some quarters to have resulted in a better agreement for adherence to the proposed International Raw Steel Cartel, so that when negotiations are resumed in Paris about Sept. 17, Belgian participants will be likely to sign.

Among the various reports circulating about these negotiations is the suggestion that there will be a proposal to base the syndicate prices on the market price in the United States, maintaining a level \$2 per gross ton less than the American quotation. On this basis prices would be fixed fortnightly by a committee representing all members. Such action would mean an increase, based on present levels, of 15 to 20 per cent from the lowest prices, those of French and Belgium mills.

FRENCH SITUATION BETTER

Domestic Buyers Quiet as They Consume Old Stocks—Prices Firm With Mills Offering Long Delivery

PARIS, FRANCE, Sept. 10.—Although the iron and steel markets are quiet, the situation is considered healthy, consumers, as a result of the greater stability of the franc, having apparently begun to reduce the heavy stocks of material that were piled up during the recent period of violent exchange fluctuation. For the present the price level is not of particular importance, but when consumers again enter the market, probably in a few weeks, the question of revision to a level in line with the exchange will be of great interest to both buyers and sellers.

Negotiations of French, German and Luxembourg interests for the delivery to Germany of a certain quantity of pig iron were resumed last week at Dusseldorf. It is rather generally expected that the negotiations will prove successful. Unless the Belgian mills find a means of adhering to the proposed International Steel Syndicate at the coming meeting, Sept. 17, it is predicted in some quarters that not only this association but the European Rail Makers Association and other proposed international agreements of the same character will prove unsuccessful and European steel producers will enter into another and more serious period of disastrous competition.

Pig Iron.—Output of iron was increased largely in August to meet the increased demand but decline in buying in the early days of September and the closing days of August has left a surplus stock. Blast furnaces will evidently find it necessary to curtail output temporarily until foundry consumers have reduced the stocks accumulated when the market was advancing under the impetus of a depreciating franc. The most recent advance in the price of hematite iron, a 15 fr. per ton increase, was caused by the higher cost of German coke but with the exchange more stable a downward revision seems to be expected. The export pig iron market is quite firm and producers have advanced prices 2s. per ton to £3 11s. for No. 3 foundry f. o. b. Antwerp. Exports of phosphoric foundry iron in July were small to Great Britain but there was an increase to Italy and Switzerland, especially in hematite iron.

Semi-Finished Material.—Prices are rising both for domestic and export shipment. Material for spot shipment is scarce and quotations are easily maintained at £4 10s. for blooms, £4 16s. to £4 17s. for billets and £5 1s. to £5 2s. for slabs.

Finished Material.—Deliveries are longer, the average offer on bars being 8 to 10 weeks with three to five weeks quoted on heavy sections. While it is claimed by buyers that a few plants are still willing to make slight concessions, this cannot be confirmed. Beams are strong at £4 19s. 6d., bars at £5 2s. to £5 3s. and wire rods at £5 7s. 6d. to £5 10s. per metric ton, all f. o. b. Antwerp. Sheets are more active than other rolled products and prices, particularly on heavy gages, are advancing. Inquiries for sheets for export are numerous and prices in this market, also, are increasing.

Soviet Russia Buying German and Austrian Equipment

Under the new German trade credit plan industrial institutions of the Soviet Union are placing large orders for machinery with German firms, according to official reports received by the Russian Information Bureau, Washington.

The Southern Ore Trust of the Soviet Union has voted to purchase full equipment for a large electric-power station in Germany. The trust is arranging with a German firm for the construction in the Ukraine of several plants for the dressing of manganese ore.

Machinery Markets and News of the Works

BUSINESS IMPROVES

More Orders Placed by Automobile and Electrical Companies

General Electric Co. Inquires for Fort Wayne Plant—Delco Light Co. Continues to Buy for Dayton

IMPROVEMENT in machine-tool business is reported from Cincinnati and Chicago, although the increase in orders is slight and buying is confined mainly to single machines. In other selling centers trade is still quiet. The automobile and electrical industries are proving important sources of business in the absence of activity on the part of the railroads.

The Delco Light Co., Dayton, Ohio, continues to place orders for its new plant, having bought three gap lathes and six automatic lathes, in addition to the 16 automatic machines purchased in the previous fortnight. The General Electric Co., Schenectady, N. Y., has issued a list of 10 machines for its Fort Wayne, Ind., works.

More orders are coming from the automobile industry, and a good volume of business is expected from that source this fall because of plant extensions and changes in equipment necessitated by the bringing out of new models. A Michigan automobile company has purchased 10 turret lathes from a Cleveland manufacturer. A Detroit motor company has placed orders for six geared-head lathes, a jig borer and a vertical shaper, and another automobile manufacturer in the Detroit district purchased five lathes.

The New York Air Brake Co. is getting quotations on a number of tools for its Watertown, N. Y., plant. The New York Central Railroad has bought a 44-in. boring mill and an engine lathe, and the Electric Machinery Mfg. Co., Minneapolis, has ordered a 62-in. boring mill.

Production of machine tools in the Cincinnati district is being maintained at a moderate rate, and little change in operations is expected in the next few weeks. Several new tools will be shown for the first time at the National Steel and Machine Tool Exposition at Chicago this week, and it is believed that considerable business will be placed shortly by prospective buyers who have delayed purchases pending an inspection of the exhibits.

New York

NEW YORK, Sept. 21.

MACHINE tool business is about at the rate of recent weeks, with no outstanding features. The New York Air Brake Co. is getting quotations on a number of tools for its Watertown, N. Y., plant. Sales of the week include four 16-in. geared-head lathes, two 13-in. geared-head lathes, a jig borer and a vertical shaper to a Detroit motor company; four double-spindle automatic milling machines to an automobile plant at Flint, Mich.; a rotary surface grinder and a vertical surface grinder to a lubricator company in Detroit; a 36-in. x 16-ft. engine lathe to the Wisconsin Public Service Corporation; a jig borer to an axle manufacturer in Detroit and a jig borer to a dictaphone company.

The Martin Troop Co., Inc., 1215 Boulevard, Bayonne, N. J., recently incorporated, will manufacture automobile radiators and will repair radiators, bodies and fenders. The company contemplates enlargement of its plant in the near future and new equipment will be purchased.

The International Fire Equipment Corporation, 6 West Twentieth Street, New York, has been incorporated to manufacture a fire extinguisher. Within the near future it will bring out another device, when it may be in the market for machinery and materials. R. Hoyt Sloan is president.

The Koeppen Metal Products, Inc., Union City, N. J., recently incorporated, has engaged in the manufacture of cooking utensils for hotels and restaurants.

The Webster Metal Works, 9 Webster Street, Newark, N. J., has been organized to do stamping and drawing work. D. Joseph is head of the company.

The Republic Die Casting Co., Inc., 128-138 Mott Street, New York, has arranged with the Modern Engineering Co., 218 Broadway, consulting and designing engineer, to act as its designing department. This department will serve customers of the Republic Die Casting Co. by designing parts to make them adaptable to the die-casting process. M. Katahor is vice-president of the Republic Die Casting Co. and also vice-president of the Modern Engineering Co.

The McPike Mfg. Co., 109 Montgomery Avenue, Irvington, N. J., has been incorporated with capital stock of \$25,000 to manufacture a general line of automobile accessories and specialties. It has leased a plant at the address mentioned and will do some of its own manufacturing, but will let out a part of it on contract. The company is in the market for lock washers, plain flat washers, wing nuts, machine screws and screw machine parts.

The Ton-Tex Corporation, manufacturer of Ton-Tex belting, has been incorporated with paid-in capital stock of \$50,000 and will manufacture a thin duck composition belt for both transmission and conveying purposes. The main sales offices and stockrooms are at 245-251 West Thirty-fifth Street, New York. The factory office is at Grand Rapids, Mich. The new product will be on the market Oct. 1. Ton-Tex belting will be sold both direct to the consumer and also through stock-carrying distributors. George S. Baker is vice-president and general manager.

The New York Central Railroad Co., C. S. White, purchasing agent, room 244, 466 Lexington Avenue, New York, is asking bids until Sept. 30 for requirements of bars, shapes, plates, etc., serial contract 25-1926.

The Meisel-Galland Co., 207 Starr Street, Brooklyn, will take bids for a three-story steam power plant, 100 x 100 ft., for use in connection with its dye works, to cost \$120,000 with equipment. H. J. Nurick, 44 Court Street, is architect.

The U. S. Taximeter Corporation, 514 West Fifty-seventh Street, New York, has leased the four-story and basement building at 555 West Fifty-seventh Street for a new service and repair branch. Headquarters will also be established at this location.

The Board of Education, Union Free High School District No. 4, Sayville, N. Y., plans the installation of manual training equipment in its proposed new two-story high school to cost \$350,000, for which bids have been asked on general contract. Tooker & Marsh, 101 Park Avenue, New York, are architects.

The Westchester Lighting Co., Mount Vernon, N. Y., has awarded a general contract to Cuasi Brothers, Inc., 70 South Second Avenue, for a four-story equipment service and repair building, 80 x 135 ft., at White Plains, N. Y., to cost in excess of \$125,000.

The Motometer Co., 11 Wilbur Avenue, Long Island City, manufacturer of automobile equipment, industrial thermome-

ters, etc., has acquired the plant and business of the National Gauge & Equipment Co., La Crosse, Wis., manufacturer of oil gauges, ammeters, instrument panels, etc., and will operate as a subsidiary.

The Post Office Department, Washington, has authorized the purchase of a property on Thirty-third Street, between Tenth and Eleventh Avenues, New York, totaling 41,200 sq. ft., for a new multi-story automobile service, repair and garage building. The structure is reported to cost in excess of \$500,000 with equipment.

The Golde Patent Mfg. Co., 514 West Fifty-seventh Street, New York, manufacturer of automobile tops, has leased a portion of a recently completed factory at Long Island City for a new plant.

The Plugfit Piston Co., Inc., 318 West Forty-eighth Street, New York, is said to be planning the purchase of one or more drill presses and other equipment.

The plant and machinery of the Braender Rubber & Tire Co., Wallington, near Passaic, N. J., have been acquired at a public auction by L. M. Drew and associates for \$100,000. The new owners are said to be arranging to operate the plant.

Joseph A. Hoegger, Inc., 351 Palisade Avenue, Jersey City, N. J., manufacturer of door fasteners, etc., will ask bids soon for a one-story addition, 100 x 200 ft., to cost about \$50,000. Lockwood, Greene & Co., 100 East Forty-second Street, New York, are architects and engineers.

The Middlesex Water Co., Elizabeth, N. J., is planning the installation of two electrically-operated pumping units with daily capacity of 1,000,000 gal., in connection with extensions in the water system.

The Board of Education, Phillipsburg, N. J., plans the installation of manual training equipment in its two-story high school to cost \$200,000, for which bids are being asked on a general contract until Sept. 28. Ernest Sibley, Bluff Road, Palsade, N. J., is architect.

The Department of Parks and Public Property, City Hall, Newark, N. J., Charles P. Gillen, director, has been authorized to proceed with the construction of a one-story automobile service, repair and garage building for heavy motor equipment of the street-cleaning and refuse collection divisions. It will be 85 x 187 ft., with extension, 85 x 102 ft., estimated to cost \$300,000 with equipment.

The Short & Roehm Co., Newark, recently organized, has leased a portion of the plant at 372 Orange Street for the establishment of new works for the manufacture of metal specialties, including signs, emblems, etc. Equipment will be installed to allow production in October. Joseph B. Short and Richard Roehm, both formerly connected with the Whitehead & Hoag Co., Newark, manufacturer of metal novelties, will be president and vice-president respectively; Frederick Keer is secretary and treasurer.

Bids will be received by the Department of Parks and Public Property, City Hall, Newark, Charles P. Gillen, director, until Sept. 27 for the construction of a new power plant, 46 x 118 ft., installation to include four 250-hp. boilers, ash and coal conveyors, automatic stokers, overhead coal bunkers, etc. Bids received on former call, totaling \$400,000, were recently rejected, and revised plans have been drawn by J. S. Pigott, 14 Park Place, architect.

Philadelphia

PHILADELPHIA, Sept. 21.

SMITH, DRUM & CO., Allegheny Avenue, Philadelphia, engineers and machinists, have filed plans for a two-story addition to cost \$45,000.

The Department of City Transit, 1211 Chestnut Street, Philadelphia, has received a low bid on general contract from the Golder Construction Co., 263 South Fifteenth Street, for its one and two-story car repair and machine shops for the Broad Street subway, at a price of \$1,113,115.

The Pennsylvania Railroad Co., Broad Street Station, Philadelphia, has awarded a general contract to the Industrial & Building Construction Co., Pittsburgh, for the proposed one-story tank and plate shop, 120 x 590 ft., at its Altoona works, to cost approximately \$265,000 with equipment.

The Samuel M. Langston Co., Sixth and Jefferson Streets, Camden, N. J., manufacturer of paper box machinery, has asked bids on general contract for a one-story addition, including improvements in the present factory. Lackey & Hettel, 5 Hudson Street, are architects.

The Bell Needle Co., Camden, N. J., has arranged for the removal of its works to a new plant at Swedesboro, N. J., where the capacity will be considerably increased.

The Board of Education, Bloomsburg, Pa., plans the installation of manual training equipment in its proposed new

senior and junior high school, to cost about \$250,000, for which bids are being asked on general contract until Sept. 27. Ritter & Shay, Packard Building, Philadelphia, are architects.

The Keystone Portland Cement Co., Commonwealth Building, Allentown, Pa., John Buckland, president, recently organized, has completed arrangements for the purchase of 337 acres near Bath, Pa., for a proposed mill. The plant will operate under the wet process and will be equipped for an initial output of 3500 bbl. per day. It will cost in excess of \$1,500,000 with machinery. Mr. Buckland is also head of the National Slag Co., Allentown.

The American Locomotive Co., Chester, Pa., has awarded a general contract to the F. K. Worley Corporation, 1701 Arch Street, Philadelphia, for a new one-story machine and repair shop, 70 x 86 ft. Headquarters are at 30 Church Street, New York.

Edgar Myers, Inc., Camden, N. J., recently organized, has acquired the property and business of Ely's Automobile Agency, Front and Federal Streets, representative for the Ford automobile. The purchase includes the parts department, service and repair departments. The new owner has plans under consideration for expansion. Edgar Myers and Victor R. Cramer head the new company.

The West York Borough School Board, 1338 West Market Street, York, Pa., Harry Lauer, president, is said to be considering the installation of manual training equipment in a proposed two-story senior and junior high school at West York, to cost \$100,000, for which bids have been asked on a general contract. Witman & Royer, 47 East Market Street, York, are architects.

The Department of Public Safety, room 215, City Hall, Philadelphia, George W. Elliott, director, is asking bids until Sept. 30 for a quantity of wire, rubber lead-covered cable, metal fire and patrol boxes, fittings, lead pipe, man-hole frames and covers, etc., for the electrical bureau. Specifications at room 616, City Hall.

New England

BOSTON, Sept. 20.

THE machinery market the past week was colorless. Sales of new equipment were at a minimum, and those reported involved small and inexpensive machines. Three small power presses to a Roxbury, Boston, shop was the most important transaction in used tools. New inquiries were also scarce and called only for single machines. Many New England manufacturers and dealers will attend the National Steel and Machine Tool Exposition at Chicago this week, and it is anticipated that considerable business will result from the machines on display.

Small tool sales are quite active, indications for September being 100 per cent or more larger than those for August.

The American Steel & Wire Co., Worcester, Mass., has placed an order with the Westinghouse Electric & Mfg. Co., for one 3000 hp. motor, two 1500 kw. motor generators, 40 motors ranging from 2 to 200 hp. and control apparatus to cost approximately \$225,000. The equipment is for its new Morgan Construction Co. wire drawing mill.

Hill, Clarke & Co., Inc., 156 Oliver Street, Boston, has been made New England agent for Landis grinding machinery.

The Boston & Albany Railroad has plans for a one-story, 51 x 60 ft. engine house at Framingham, Mass. Plans are private.

The Boston Elevated Railway Co., Park Square Building, Boston, contemplates the erection of a one-story plant for bending rails to cost without equipment \$35,000. Plans are private.

Contract has been awarded for the foundations for a plant to be erected by the Thomson Electric Welding Co., 161 Pleasant Street, Lynn, Mass. Haven & Hopkins, 11 Beacon Street, Boston, are the engineers.

The Boston & Maine Railroad, North Station, Boston, is having plans prepared for a boiler shop, tender and cab shop, one story, 150 x 572 ft., at Billerica, Mass. F. C. Shepard, chief engineer, is in charge of plans.

Plans are nearing completion for a two-story and basement high school, with wing 33 x 87 ft. for the city of Dartmouth, Mass., which will contain mechanical shops. Browne & Poole, 688 Pleasant Street, New Bedford, Mass., are the architects.

The Crane Market

NEW inquiry for overhead cranes is confined to requests for prices on single installations. In the locomotive crane field, the New York Central has issued an addition of two 25-ton cranes to its outstanding inquiry, bringing the total to seven machines, one of which is a crawl-tread crane and two of which are combination locomotive cranes and pile drivers. The General Electric Co. is inquiring for two 5-ton overhead cranes for West Philadelphia. The Bayway Terminal, Elizabeth, N. J., has been securing quotations for the installation of about 9000 ft. of overhead track and about 100 hand power trolleys of $\frac{1}{2}$ -ton capacity.

In the Pittsburgh district the American Sheet & Tin Plate Co. has inquired for three of a total of 20 cranes that will be required for its Gary tin plate plant. The Carnegie Steel Co. is expected to close shortly for cranes at Duquesne and Clairton. The Struthers-Wells Co., Warren, Pa., is in the market for a tower riveting crane to be purchased later. The Koppers Co., Pittsburgh, has asked for prices on several cranes and the Carnegie Steel Co. has 10 cranes pending for Houston, Tex.

Among recent purchasers are:

International Cement Co., New York, a bucket handling crane for export, from the Milwaukee Electric Crane & Mfg. Co.

Foundation Co. of Canada, Ltd., Montreal, a used No. 21, crawl-tread, Marion steam shovel, from A. R. Gelinas, Montreal.

Mistessini Power & Paper Co., Ltd., Montreal, a 20-ton used Orton & Steinbrenner locomotive crane from A. R. Gelinas, Montreal.

L. Dussault Co., Ltd., Quebec, a used 15-ton Brownhoist locomotive crane from E. P. Galer, 1060 Anderson Avenue, New York.

Central Wisconsin Power Co., Madison, Wis., a 5-ton hand power crane from H. D. Conkey & Co.

Star Electric Motor Co., Newark, N. J., two 1-ton hand power jib cranes from H. D. Conkey & Co.

Southern Malleable Iron Co., St. Louis, Mo., four 2-ton electric cranes from H. D. Conkey & Co.

International Harvester Co., Chicago, two 2-ton underhung hand power cranes and two 1-ton hand power push cranes and two 1-ton underhung hand power cranes with electric hoists from H. D. Conkey & Co.

Wisconsin Power & Light Co., Janesville, Wis., a 10-ton hand power crane from H. D. Conkey & Co.

Terminal Refrigerating & Warehousing Co., Washington, D. C., two 1-ton motor driven overhead cranes from H. D. Conkey & Co.

The Bird Machine Co., South Walpole, Mass., paper machinery, has awarded contract for a one-story, 80 x 80 ft., machine shop addition. Charles S. Bird is president. Monks & Johnson, 99 Chauncy Street, Boston, are the engineers.

The Vermont Farm Machinery Corporation, Bellows Falls, Vt., will be sold at public auction Oct. 16 at 2 p. m. The company was organized in 1868.

H. J. Mills, Inc., Church Street, Bristol, Conn., manufacturer of paper boxes and containers, has awarded a general contract to George LaCourse, George Street, for a three-story addition.

Plans are being prepared for a two-story automobile service, repair and garage building, 50 x 490 ft., at New Haven, Conn., for George Ratner, 32 Church Street, and associates, to cost \$160,000 with equipment.

The Hunt-Spiller Corporation, 383 Dorchester Avenue, Boston, has filed plans for a one-story foundry addition.

The Massachusetts Lighting Companies, 77 Franklin Street, Boston, are arranging for a stock issue of \$600,000, of which about \$350,000 will be used for extensions and improvements. A portion of the fund will be used for enlargements in the gas generating plant of the Arlington Gas Light Co., Arlington, a subsidiary.

Lindahl & Co., 181 Main Street, Hartford, Conn., manufacturers of sheet metal products, roofing, etc., have acquired the plant and business of the F. W. Stelling Corporation, Hartford, manufacturer of kindred specialties, including cornices, etc., and will consolidate operations at the last noted plant.

The E. Van Noorden Co., 85 Allerton Street, Boston, manufacturer of sheet metal products, has taken out a permit for a one-story addition to cost about \$20,000.

The Packard Motor Car Co., 150 Washington Street, Hartford, Conn., has acquired adjoining property for a two-story service, repair and garage addition to cost more than \$100,000 with equipment.

Effective Nov. 1, Luria Brothers & Co., 609 Board of Trade Building, Boston, old materials, will be located at 718 Statler Building, Park Square. M. B. Kafker is district manager.

Buffalo

BUFFALO, Sept. 20.

THE Niagara Falls Smelting Co., 2208 Elmwood Avenue, Buffalo, will erect a one-story machine shop.

The McConley Metal Products Co., 45 Letchworth Street, Buffalo, has plans for a second story addition to its one-story plant, to cost in excess of \$20,000 with equipment.

In connection with the recent acquisition of the George W. Dunham Co., Utica, N. Y., manufacturer of washing machines and parts, by the Winchester Repeating Arms Co., New Haven, Conn., plans are being arranged for the early closing of the local factory and the removal of the machinery to the works of the purchasing company, where quarters will be provided for a new operating unit.

The Kellogg Products Co., 1317 Elk Street, Buffalo, manufacturer of linseed oil, etc., will take bids for the erection

of a new three-story plant at Edgewater, N. J., 100 x 150 ft., to cost \$175,000 with machinery. Plumer & Mann, 700 Main Street, Buffalo, are architects. Howard Kellogg is president.

J. P. Danielson & Co., 583 Allen Street, Jamestown, N. Y., manufacturer of wrenches, tools, etc., has awarded a contract to Paddock & Nash, Phillips Building, for a new one-story building, 50 x 120 ft., to cost about \$25,000.

The Great Lakes Portland Cement Corporation, Buffalo, has taken out a permit for another building at its new mill, now in course of erection; the new structure will cost about \$40,000. Plans for other units will be filed soon. The entire project will cost in excess of \$650,000 with machinery.

The General Electric Co., Schenectady, N. Y., is said to be arranging for the centralization of all electric locomotive work at its shops at Erie, Pa., including parts and assembling operations. Certain machinery, it is said, heretofore used at Schenectady, will be removed to Erie.

The Consolidated Aircraft Corporation, 2050 Elmwood Avenue, Buffalo, is having plans drawn for a one-story addition, 50 x 160 ft., with extension, 35 x 40 ft.

The Morrison & Risman Co., Inc., Buffalo, has been awarded contract for all railroad track material for the new Pontiac motor car plant at Pontiac, Mich. This plant will have about 9½ miles of railroad track on its own property.

Chicago

CHICAGO, Sept. 20.

DEALERS in machine tools are finding the market more active both from the standpoints of sales and inquiries. The interest of buyers centers on medium-sized and small equipment, and both orders and inquiries are widely scattered and are confined mainly to single tools. Quotations are in on the lists for the Pullman Car & Mfg. Corporation and the Illinois Steel Co., but purchase orders have not been mailed. Deliveries on planers are slightly improved, but shipping dates on radial drills are gradually extending.

The General Electric Co. has issued the following list for its Fort Wayne, Ind., plant:

One tool and cutter grinder, similar to No. 3 Brown & Sharpe.

One 20-in. wet tool grinder, similar to Ransom.

One 12-in. x 6-ft. tool-room lathe, similar to Hendy.

One universal miller, similar to No. 2 Cincinnati.

One bench drilling machine.

Two surface grinders, similar to No. 2 Brown & Sharpe.

One single spindle 5/16-in. Segourney sensitive drill.

Two 20-in. single spindle drill presses with 24-in. x 24-in. table, similar to Henry & Wright.

The Public Service Co. of Northern Illinois, 72 West Adams Street, Chicago, has plans for a one-story and basement substation at Streator, Ill., to cost \$70,000.

Bunte Brothers, Chicago, candy manufacturers, 3301 Franklin Boulevard, Chicago, have asked for bids for a 40-ton per hr. combined coal and ash handling system.

The Webster Mfg. Co., handling equipment, has moved from 4500 Cortland Street to 1856 North Kostner Avenue, Chicago.

The C. J. Dorff Mfg. Co., 1716 West Adams Street, Chicago, manufacturer of screw machine products, will build a two-story factory, 40 x 132 ft., to cost \$20,000. J. K. Meede, 3713 North Keddale Avenue, is architect.

The Nelson Le Moon Truck Co., 840 North Kedzie Avenue, Chicago, will build a one-story brick factory, 120 x 150 ft., to cost \$40,000. A. V. Teisen, 4804 North Kedzie Avenue, is the architect.

Maier & Co., 2939 George Street, Chicago, will build a boiler and engine room, 50 x 87 ft., to cost \$22,000. R. Griesser, 64 West Randolph Street, is the architect.

Hewitt & Emerson, Peoria Life Building, Peoria, Ill., architects, have plans for a three-story automobile service, repair and garage building, 144 x 170 ft., at 100 North Madison Street, to cost \$150,000.

The Interstate Power Co., Decorah, Iowa, will proceed with the construction of a new hydroelectric power plant in the vicinity of Delhi, Iowa, to cost about \$400,000 with equipment.

The Board of Education, Virginia, Minn., plans the installation of manual training equipment in its proposed three-story and basement junior high school, to cost \$1,000,000, for which E. H. Berg, Eveleth, Minn., is architect.

The Kahler Corporation and the Mayo Clinic, Rochester, Minn., have plans for a new steam-operated central electric power plant, two and three stories, to cost \$350,000 with equipment. The Ellerbe Co., Endicott Building, St. Paul, Minn., is architect.

Lewis & Daugherty, Adams Building, Danville, Ill., architects, have plans under way for a two-story and basement automobile service, repair and garage building, 60 x 125 ft., at Taylorville, Ill., to cost \$130,000 with equipment.

The Atchison, Topeka & Santa Fe Railway Co., Chicago, has plans for a one-story steel car shop at Pueblo, Colo., to cost \$150,000; also for a one-story machine and repair shop, to cost approximately \$200,000 with equipment. H. A. Tice is division superintendent, 401 North Union Avenue, Pueblo.

The Roth Packing Co., Waterloo, Iowa, meat packer, is said to be planning the installation of a cold storage and refrigerating plant in its packing house addition to cost \$500,000. Henschein & McLaren, 1637 Prairie Avenue, Chicago, are architects.

Oscar Mayer & Co., meat packers, 1241 Sedgwick Avenue, Chicago, will build a two-story addition, 100 x 145 ft., to their branch house and cold storage plant at Madison, Wis. Bids are being taken by Henschein & McLaren, engineers, 1637 Prairie Avenue, Chicago. The work will cost about \$85,000 including equipment.

Cincinnati

CINCINNATI, Sept. 20.

THERE has been a slight increase in machine tool sales the past week and the number of inquiries before the trade indicates further improvement in the near future. While railroad buying has been at a low point recently, the betterment in business from the automotive and electrical industries has been an encouraging factor. Production by local machine tool builders is being maintained at a moderate rate and little change in the scale of operations is looked for in the next few weeks. In addition to displaying for the first time new tools at Chicago this week, Cincinnati manufacturers expect to close considerable pending business.

The Delco Light Co., Dayton, Ohio, which has purchased some machines for its new manufacturing units, has added three gap-bed lathes and six automatic lathes. An electrical company has bought three large lathes in this market, and several planers were disposed of by local builders in the past week. An automobile maker in the Detroit district has taken five lathes and another manufacturer is negotiating for several special machines. The New York Central has bought a 44-in. boring mill and a lathe, and the Wisconsin Public Service Corporation, Green Bay, Wis., has purchased a 36-in. x 16-ft. motor-driven lathe from the Niles-Bement-Pond Co. The Electric Machinery Mfg. Co., Minneapolis, has bought a 62-in. boring mill.

The Kirk & Blum Mfg. Co., 2846 Spring Grove Avenue, Cincinnati, has purchased an adjoining factory building

which will enable it to double its plant facilities. The company manufactures pneumatic dust collecting, ventilating and conveying systems. R. J. Blum is vice-president.

The Chrysler Motor Corporation, Dayton, Ohio, has filed plans for a one-story addition for parts manufacture, to cost about \$40,000. B. R. Secord is general manager.

The Dempster Equipment Co., Walnut and Church Streets, Knoxville, Tenn., machinery dealer, has inquiries out for a 10-ton and a 15-ton hand-operated crane, 30-ft. span.

The Board of Education, Utica, Ohio, contemplates the installation of manual training equipment in its proposed new high school to cost \$115,000, for which plans will be prepared by G. E. Scott, Citizen's National Bank Building, Norwalk, Ohio, architect.

The Constructing Quartermaster, Air Service, Wright Field, Dayton, Ohio, is asking bids on a general contract until Oct. 7 for a new assembling shop to replace a structure recently destroyed by fire.

The Frigidaire Corporation, Dayton, Ohio, has been formed by officials of the General Motors Corporation, Detroit, to take over and operate the electric refrigerator division of its subsidiary, the Delco Light Co. It will succeed to the Frigidaire plant now in course of construction near Dayton. The Delco Light Co. will continue the production of isolated electric lighting plants, power plants, water pressure systems, etc., and will make additions to the present factory space.

The Golden Rule Oil & Gas Co., 325 West Clinch Street, Knoxville, Tenn., has plans for a new refinery, with initial output of about 10,000 gal. per day. A list of equipment has been arranged and purchases will be made at once.

The American Hoist Corporation, Hamilton National Bank Building, Chattanooga, Tenn., is arranging for an increase in capital, the proceeds to be used for extensions and additional machinery. O. B. Gladish is manager.

The Elk River Mfg. Co., Butler, Tenn., manufacturer of tables, etc., is considering plans for an addition to cost close to \$40,000 with equipment.

Detroit

DETROIT, Sept. 20.

CONTRACT has been let by the Holley Carburetor Co., Vancouver Avenue and the Pere Marquette Railroad, Detroit, to Culbertson & Kelly, 872 West Milwaukee Avenue, for a three-story addition, 90 x 106 ft., to be equipped in part as a foundry. Albert Kahn, Inc., Marquette Building, is architect.

The Detroit Edison Co., 2000 Second Avenue, Detroit, is said to be planning the construction of a new steam-operated electric power plant at Williamston, Mich., to cost in excess of \$175,000.

The Peninsular Stove Works, Inc., West Fort Street, Detroit, is arranging for the sale of its property to the Michigan Central Railroad for about \$5,000,000. It has secured options on another site in the city, aggregating 20 acres, and contemplates the erection of a new plant to cost in excess of \$1,500,000. It is also considering the establishment of new divisions for the production of furnaces, oil stoves and other heating apparatus.

The Central Steel & Wire Co., 5001 Bellevue Avenue, Detroit, has awarded a general contract without competition to the Henry B. Ryan Co., 510 North Dearborn Street, Chicago, for a one and two-story addition, 90 x 170 ft., to cost about \$45,000. A portion of the structure will be used for storage and distributing service. W. S. Crosby, 6 North Michigan Avenue, Chicago, is architect. Harry R. Curran is president.

The Board of Education, Battle Creek, Mich., plans the installation of manual training equipment in its proposed two-story and basement Southwest Junior high school, to cost \$500,000, for which bids are being asked on a general contract until Sept. 30. John D. Chubb, 109 North Dearborn Street, Chicago, is architect.

The Cogdill Mfg. Co., 6511-15 Epworth Boulevard, Detroit, manufacturer of metal cutting tools, etc., has awarded a general contract for its one-story addition, 35 x 140 ft., to Walter Halle, 15805 Alden Street, to cost about \$45,000 with equipment. Janke, Venman & Krecke, Broadway Exchange Building, are architects.

The Consumers Power Co., Jackson, Mich., has applied for permission to dispose of preferred stock in amount of \$2,000,000, the proceeds to be used for extensions and improvements. The company will construct a large addition to its steam-operated electric power plant at Kalamazoo, Mich.

The Ford Motor Co., Highland Park, Detroit, will make extensions in its steam-operated power plant at River Rouge to cost about \$500,000 with equipment.

The Michigan Limestone & Chemical Co., Rogers City, Mich., has awarded a general contract to the Pfeffer Construction Co., Builders' Exchange, Duluth, Minn., for a new one-story machine shop, 125 x 240 ft., to cost close to \$90,000 with equipment. It is also considering the erection of a new crusher plant addition. Carl D. Bradley is president.

Indiana

INDIANAPOLIS, Sept. 20.

TH E STUDEBAKER CORPORATION, South Bend, Ind., has begun the construction of a new factory branch, storage and distributing plant at Sydney, Australia, to cost close to \$800,000. An assembling department, repair and parts departments will be installed.

The Cass Specialty Co., Indianapolis, recently organized, will operate a plant at 715-21 Fort Wayne Avenue for the manufacture of industrial thermometers and kindred products, including fire extinguishers, etc. The company is a consolidation of the Central Plating & Mfg. Co., defunct, and the Central Advertising Specialty Co., the latter formerly located at Terre Haute, Ind. R. M. Cass is president.

The City Council, New Haven, Ind., will soon ask bids for a municipal waterworks, to include a 100,000-gal. capacity steel tank on tower. The installation will cost about \$25,000. O. M. Darling, Farmers' Trust Building, Fort Wayne, Ind., is architect and engineer.

The Port-Jay Refining Co., Portland, Ind., recently organized, has acquired the local plant and properties of the Portland Oil & Refining Co. Extensions and installation of additional machinery are under consideration.

The Standard Oil Co., Terre Haute, Ind., has filed plans for a one-story oil storage and distributing plant, 50 x 145 ft., to cost about \$60,000 with equipment.

The Board of Education, New Albany, Ind., is considering the installation of manual training equipment in its proposed two-story and basement high school to cost \$325,000, for which bids on general contract will be asked in October. W. C. Findt, High School Building, Springfield, Ohio, is architect.

The Waterworks Board, Evansville, Ind., plans the installation of pumping machinery and other power equipment in connection with proposed extensions and betterments in the municipal water system, estimated to cost \$1,270,000.

The Schebler Carburetor Co., 1302 Barth Street, Indianapolis, has filed plans for a one-story addition.

South Atlantic States

BALTIMORE, Sept. 20.

SAMUEL T. WILLIAMS, 8 East Lexington Street, Baltimore, mechanical engineer, has inquiries out for a 250-kw. generator, direct-connected; a 225-kw. engine-generator, and engine of 325 hp. rating, switchboard and accessory equipment, boilers, feed-water heaters, pumps and auxiliary power house equipment.

The Virginian Railway Co., Norfolk, Va., has work in progress on the electrification of its line from Mullens, W. Va., to Roanoke, Va., about 134 miles, and purposes to complete the work before the close of the year. The project includes a steam-operated electric power plant on the New River at Narrows, Va.

In connection with a proposed expansion and improvement program to cost close to \$1,500,000, the Georgia Railroad & Power Co., Atlanta, Ga., plans additions to its car barns and repair shop. It is also purposed to construct one or more automobile service, repair and garage buildings for company motor buses.

The Chesapeake Mfg. Co., Barre and Sharp Streets, Baltimore, manufacturer of furniture, has engaged Oliver B. Wight, Munsey Building, architect, to prepare plans for its two-story addition, 27 x 100 ft., to cost close to \$70,000 with equipment.

The Savannah Electric & Power Co., Savannah, Ga., is said to be planning to rebuild the portion of its power house destroyed by fire Sept. 11, with loss reported at \$100,000 including equipment.

The Taylor-Parker Co., Water Street and Commercial Place, Norfolk, Va., has inquiries out for a 75-hp. stationary engine, Corliss type; also for wood-working equipment, including tenoner, double end type.

The Long Lumber Co., Fruitland, Md., plans the installation of a machine shop in connection with rebuilding its basket-manufacturing plant, recently destroyed by fire. A lathe, drill press and other tools will be installed. The new structure will be one story, 80 x 100 ft. T. R. Twilley,

Harrington, Del., is engineer. Conrad O. Long is general manager.

Appleton P. Clark, Jr., 816 Fourteenth Street, N. W., Washington, architect, has plans under way for a three or four-story addition to the automobile service, repair and garage building of Emerson & Orne, Seventeenth and M Streets, N. W., 130 x 135 ft., to cost about \$250,000 with equipment.

The Southern Fruit Co., 47 South College Street, Charlotte, N. C., has plans for the erection of a new cold storage and refrigerating unit to cost \$125,000 with equipment.

The Craig Furniture Co., Inc., Martinsville, Va., will soon begin the erection of a one-story factory, 200 x 500 ft., to cost close to \$200,000, of which approximately \$100,000 will be expended for machinery. S. E. Booker is secretary.

The Liggett & Myers Tobacco Co., Durham, N. C., has completed plans for a central steam-operated electric power house, to cost approximately \$100,000 with equipment. Lockwood, Greene & Co., 100 East Forty-second Street, New York, are architects and engineers.

The Hackley-Morrison Co., 1708 Lewis Street, Richmond, Va., machinery dealer, has inquiries out for a 100-hp. automatic engine, one 150-hp. slow speed stationary engine, a 100-hp. and a 150-hp. horizontal return tubular boiler, 24 in. drill press, one 20-hp. motor, 3-phase 60-cycle 220 volts, with base, pulley and starter, and one 10 x 12 in. steam-driven air compressor.

The Lynchburg Foundry Co., People's National Bank Building, Lynchburg, Va., will soon begin the erection of a one-story addition, 50 x 160 ft., at Radford, to cost about \$25,000 with equipment.

J. C. Truitt, Burlington, N. C., is planning the purchase of an electric-operated industrial truck and desires to get in touch with manufacturers of such equipment.

The City Council, Albany, Ga., is planning the installation of pumping equipment in connection with proposed extensions in the municipal waterworks. A bond issue of \$187,000 will be arranged for this and other work.

The Russell Furniture Mfg. Co., Thomasville, Ga., has acquired a site for a plant, to cost in excess of \$70,000 with equipment. A. C. Russell is president.

Gulf States

BIRMINGHAM, Sept. 20.

PLANS are being considered by the H. Wallwork Foundry Co., Forty-first Street and Tenth Avenue, Birmingham, manufacturer of gray iron castings, for rebuilding the portion of its foundry destroyed by fire, Sept. 11, with loss reported at close to \$100,000 including equipment.

The Gulf Coast Lines, J. H. Lauderdale, Houston, Tex., general purchasing agent, are in the market for a 400-ton wheel press.

The Board of Education, Sweetwater, Tex., plans the installation of manual training equipment in its proposed new high school and junior college to cost about \$250,000, for which bids have been asked on a general contract. Page Brothers, Austin, Tex., are architects.

The M. H. Brown Lumber Co., Commercial Bank Building, Lake Providence, La., will rebuild the portion of its mill recently destroyed by fire, with loss estimated at \$200,000 including machinery.

The Houston Lighting & Power Co., Houston, Tex., will soon begin superstructure for its proposed new generating plant at Deepwater Point on the Houston ship channel. It will cost in excess of \$1,400,000 with machinery.

The McWane Cast Iron Pipe Co., 3600 Eleventh Avenue, Birmingham, will take bids for the erection of a two-story addition to cost \$40,000. Warren, Knight & Davis, Empire Building, are architects.

The Texas Central Power & Light Co., Frost Building, San Antonio, Tex., has plans for extensions and improvements in the electric light and power house at Fredericksburg, Tex., recently acquired. It will also make improvements in the Wellington, Tex., section, where the local municipal station was recently acquired for \$200,000.

The De Soto Parish School Board, Mansfield, La., has plans for a one-story manual training building at the local high school, to cost about \$30,000 with equipment. S. M. Shows is secretary.

The Murray-Brooks Hardware Co., Ltd., Lake Charles, La., has plans for a two-story, L-shaped, storage and distributing plant, 60 x 80 ft., to cost about \$40,000 with equipment. R. S. McCook, Frank Building, is architect.

The Skelly Oil Co., Tulsa, Okla., will proceed with the construction of its gasoline refinery at Panhandle, Tex.

The work will consist of eight compressor units, electric power plant and structures estimated to cost \$350,000.

R. W. Morrison, San Antonio, Tex., recent purchaser of the power properties of the Compania Electrica Chapala, Guadalajara, Mexico, is completing plans for extensions and improvements to cost close to \$750,000. The work will include extensions in hydroelectric generating plants, substation, and transmission line construction for a connection with the system of the Guanajuato Light & Power Co.

The City Council, Winter Garden, Fla., has plans under way for a municipal electric lighting plant in conjunction with a city waterworks. A bond issue of \$65,000 has been approved.

The municipal street railroad system, St. Petersburg, Fla., Carlton W. Beard, head, has plans for new car barns with repair shop, to cost \$125,000 with equipment.

The Tridex Equipment Co., 2215 Phelps Street, Dallas, Tex., is in the market for about 100 small centrifugal pumps, each to operate at 50 lb. pressure, with capacity of 30 to 35 gal. per hr., motor-driven; as an alternate, the company will consider small rotary pumps of like capacity.

The City Council, Gainesville, Fla., is asking bids until Sept. 28 for equipment for the municipal electric light and power plant and waterworks, including pumping equipment, heater apparatus, tanks, and electric traveling crane. Robert & Co., Bona Allen Building, Atlanta, Ga., are architects.

Milwaukee

MILWAUKEE, Sept. 20.

WHILE new business in machine tools has been at a moderate rate since the beginning of September, local manufacturers anticipate an improvement this week as the result of the exposition in Chicago. It is evident that some buyers have postponed purchases until they had opportunity to survey the new issues, but the majority of orders recently placed called for prompt delivery to meet pressing needs. Despite railroad business being light, local shops are filling a moderate number of orders, largely for milling machines. Automotive shops are expected to furnish a substantial volume of business for delivery between now and the early spring period of production.

The Milwaukee Press & Machine Co., 339 First Avenue, Milwaukee, has acquired the property of the Lutter & Gies Co., 258-260 Lake Street, and will concentrate both operations in the Lutter-Gies plant, installing its present equipment and adding considerable new machinery. The Lutter & Gies Co. was established in 1889 and manufactures tools and special machinery. The Press & Machine Co., also manufacturing special machinery, has been unable to make adequate expansion in its own plant, which led to the merger of interests. Anson Eldred is president.

The Badger Meter Mfg. Co., 841 Thirtieth Street, Milwaukee, manufacturer of vapor and fluid meters, has revised plans by M. Tullgren & Sons, architects, 9 Waverly Place, local, for a two-story shop extension, 60 x 120 ft., and will close bids this week on the construction work. Purchases of additional equipment will be made as soon as new bids are in. J. J. Leach is president and general manager.

The National Gauge & Equipment Co., La Crosse, Wis., has let the general contract to F. R. Schwalbe & Son, local engineers, for a one-story addition, 150 ft. sq., increasing the manufacturing area one-third. The National company has been acquired by the Moto-Meter Co., New York, and in addition to increasing its output of pressure gages and instruments will take over a part of the heat recording device output of the New York company, which is overcrowded in its Long Island City works. Provision is being made for a much larger output of dashboard heat recording devices for motor cars, at the same time that production of the radiator cap type requires extensive enlargement. P. M. Gelatt continues as president of the La Crosse company. George H. Townsend is president of the New York company.

The Allis-Chalmers Mfg. Co., Milwaukee, has awarded the general contract to the Klug & Smith Co., consulting engineer, 68 Wisconsin Street, for remodeling and enlarging the bolt and nut shop of the main works at West Allis at a cost of upward of \$50,000.

The Rundle Mfg. Co., Twenty-seventh and Cleveland Avenues, Milwaukee, manufacturer of plumbing and steam fitting supplies, materials and equipment, is taking bids through Cahill & Douglas, consulting engineers, 217 West Water Street, for an extension to the power plant, 47 x 50 ft., and is in the market for additional engine and boiler equipment. Henry Held is president and treasurer.

Pittsburgh

PITTSBURGH, Sept. 20.

BUSINESS in machine tools and equipment generally has been rather slow the past week, and sales so far this month have not made as good a showing as in the same period in July or August. Considerable business is in sight but difficulty is experienced in closing.

Contract has been let by the Johnson Bronze Co., South Mill Street, New Castle, Pa., to the H. K. Ferguson Co., for a three-story addition, 56 x 150 ft., with one-story extension, 50 x 55 ft., to cost approximately \$100,000 with equipment. D. J. Flaugher is president.

The Altoona School District, Altoona, Pa., has plans for an addition to the senior high school, to include manual training shops, to cost in excess of \$400,000.

The Baltimore & Ohio Railroad Co., Baltimore, has completed plans for a new engine house with repair facilities at Connellsville, Pa., to cost approximately \$50,000.

The Armstrong Mfg. Co., Huntington, W. Va., manufacturer of electric ranges, etc., is reported to be planning expansion. It recently increased its capital stock from \$500,000 to \$1,000,000.

The Norfolk & Western Railway Co., N. & W. Railway Building, Roanoke, Va., has completed plans for a new engine house and machine repair shop at Williamson, W. Va., to cost \$110,000 with equipment.

The Board of Education, New Castle, Pa., contemplates the installation of manual training equipment in a proposed three-story and basement addition to the high school, estimated to cost \$200,000. W. G. Eckles, Lawrence Savings & Trust Building, is architect.

The Standard Sanitary Mfg. Co., Bessemer Building, Pittsburgh, has taken bids on a general contract for a three-story factory branch and distributing plant at North Richmond, Cal., to cost \$350,000 with equipment. John J. Donovan, Tapscott Building, Oakland, Cal., is architect.

The South Branch Power Co., Romney, W. Va., recently organized, with corporate office care of the Corporation Guarantee & Trust Co., Land Title Building, Philadelphia, has plans under way for a new power house and system. The company is said to be arranging to take over existing properties. Transmission lines will be built.

Cleveland

CLEVELAND, Sept. 20.

BUSINESS was somewhat slow with dealers the past week and was confined almost wholly to single machines. A moderate volume of inquiry is pending, and the trade regards the outlook as promising. Good business is expected from the automobile industry this fall because of various contemplated plant extensions and other machinery requirements to bring out new models of cars. One Michigan automobile company the past week purchased 10 turret lathes from a Cleveland manufacturer, who also took an order from the Delco Light Co., Dayton, Ohio, for two machines, and from the W. & L. E. Gurley Co., Troy, N. Y., for two turret lathes.

The Virden Co., Ashland Road and Longfellow Avenue, Cleveland, manufacturer of brass products, has placed contract with the Griffin Construction Co. for an addition, 26 x 30 ft.

The Standard Electric Stove Co., Toledo, Ohio, is having plans prepared for a plant for the manufacture of stoves to be erected at Oakwood Avenue, Hawthorne Street and the New York Central Railroad. S. L. Kelly, Twelfth and Smith Streets, is president.

The city of Akron, Ohio, has placed a general contract with the Carmichael Construction Co., 526 Central Savings & Trust Building, for a power plant, shops and refrigerating plant.

The Forbes Varnish Co., Cleveland, contemplates the erection of three one-story additions, 56 x 80 ft., 56 x 58 ft. and 25 x 56 ft. E. W. Rhoades & Penndorf, 1311 Guarantee Title Building, are the architects.

The St. Bernard Mfg. Co., St. Bernard, Ohio, has placed contract with the H. K. Ferguson Co. for a foundry, 105 x 233 ft., cupola building 40 x 52 ft., storage building 46 x 192 ft. and an office building. Foundry equipment will be purchased by the owner. H. S. Sherman, Standard Car Wheel Co., Cleveland, is president.

The H. K. Ferguson Co., Cleveland, has a contract from the Marmon Motor Car Co., Indianapolis, for a one-story, 40 x 440 ft., addition, at an estimated cost of \$40,000. It has also been awarded contract by the Mohawk Limestone Products Co., Jordanville, N. Y., for two buildings, 55 x 60 ft., 55 ft. high, and 53 x 80 ft. respectively, and a 320-ft. crane runway yard.

St. Louis

ST. LOUIS, Sept. 20.

BIDS will soon be asked by the Board of Public Service, City Hall, St. Louis, E. R. Kinsey, president, for a three-story municipal service building with mechanical, electrical and other departments. It will be 275 x 281 ft., estimated to cost \$1,000,000 with equipment. Study & Farrar, Arcade Building, are architects.

Francis W. Horton, Finance Building, Kansas City, Mo., architect, has plans for the erection of a four-story and basement automobile service, repair and garage building, 110 x 145 ft., to cost \$215,000 with equipment.

The City Council, Ponca City, Okla., is considering extensions and improvements in the municipal electric light and power plant, including the installation of additional equipment. It is purposed to arrange a bond issue of \$160,000 for the work.

The Admiralty Zinc Co., 114 East Sixth Street, Tulsa, Okla., has begun work on a new mill in the Bellevue district, Missouri, to cost about \$160,000 with machinery. E. F. Blaise is one of the officials of the company in charge.

The City Council, Ringwood, Okla., plans the installation of deep-well pumping equipment in connection with a proposed municipal waterworks. A 50,000-gal. capacity steel tank and tower will also be installed.

The Marion Steam Shovel Co., Marion, Ohio, has plans for a new factory branch and distributing plant, 45 x 110 ft., in the Woodsweather industrial district, Kansas City, Mo., to cost about \$45,000 with equipment. The Henrici-Lowry Engineering Co., Security Building, Kansas City, is engineer.

The City Council, Hastings, Neb., is completing plans for an addition to the municipal electric light and power house, 45 x 73 ft., to cost about \$50,000 with equipment. John G. Mason, 525 South Thirteenth Street, Lincoln, Neb., is engineer.

The Lion Oil Refining Co., El Dorado, Ark., has preliminary plans for a new unit for the manufacture of mineral rubber specialties, to cost \$140,000 with equipment. H. M. Bredenthal is vice-president.

In connection with extensions and improvements in its ice-manufacturing plant, the Marianna Ice & Storage Co., Marianna, Ark., is planning for the installation of oil-burning engine units in addition to other machinery. The work will cost about \$30,000. J. P. Hughes is secretary and manager.

The St. Louis Coffin Co., 1821 Chouteau Avenue, St. Louis, has awarded a general contract to the H. C. Harting Construction Co., 722 Chestnut Street, for a two-story addition, 50 x 126 ft., to cost \$50,000 including equipment.

Pacific Coast

SAN FRANCISCO, Sept. 15.

ARRANGEMENTS are being made by the Pacific Gasoline Co., California Bank Building, Los Angeles, for a new refinery in the vicinity of Huntington Beach, Cal., to cost \$115,000 with equipment.

The Home Ice Co., Long Beach, Cal., has filed plans for its five-story and basement cold storage and refrigerating plant, to cost close to \$150,000 with equipment.

The Pacific Gas & Electric Co., 445 Sutter Street, San Francisco, has secured permission to use water from the North Fork of the Yuba River, Yuba County, for a proposed hydroelectric power project, with initial development of about 8000 hp.

The North Coast Casket Co., Everett, Wash., has awarded a general contract to Fred Hulbert, Everett, for a new one-story plant, to cost \$45,000 with equipment.

The Eastern Oregon Light & Power Co., Baker, Ore., has plans for an addition to its local steam-operated electric generating plant, to cost \$50,000 with equipment.

The Tilden Lumber Co., Richmond, Cal., is said to have concluded negotiations for the purchase of the plant and business of the Pacific Tank & Pipe Co., Oakland, Cal., which it has been operating under lease, with option to buy. The two interests will be consolidated, with total assets estimated at \$4,000,000. The pipe company's plant consists of 41 acres of waterfront property and will be used by the purchasing company for expansion.

The Frank J. Kimball Co., 1860 Fifteenth Street, Los Angeles, manufacturer of turbine pumps, air lift pumping equipment, etc., has plans for new works on East Sixty-second Street, comprising a one-story unit, 100 x 175 ft., with three smaller one-story structures, one of which, 30 x 60 ft., will be equipped for a pattern shop. The entire plant will cost close to \$50,000. The company purposed to remove its present works to the new location. The Austin Co. is architect.

The Richmond & Baring Co., Anacortes, Wash., recently organized, has awarded a general contract to L. A. Farmer, Anacortes, for a one-story foundry, 32 x 60 ft.

The Board of High School Trustees, Santa Barbara, Cal., has rejected bids recently received for the erection of a two-story manual training building at the high school and will ask new bids on revised plans. W. H. Weeks, 369 Pine Street, San Francisco, is architect.

The Yakima Fruit Growers' Association, Yakima, Wash., is considering the construction of a new cold storage and refrigerating plant at Zillah, Wash., to replace a plant recently destroyed by fire, with loss estimated at \$175,000 including equipment. J. Walter Herbert, 202 West Yakima Street, Yakima, is general manager.

Canada

TORONTO, Sept. 20.

WHILE some business developed as a result of displays of machine tools at the Canadian National Exhibition, demand as a whole has declined slightly during the past week. Some inquiries, however, in the hands of dealers are expected to develop into orders within the next few weeks. The General Motors Corporation is interested in tools in connection with additions under-way at Oshawa, Ont., but otherwise the automotive industry is buying only for replacement needs. Wood-working tools and mining machinery are fairly active.

D. H. Ross, Canadian trade commissioner, Melbourne, Australia, has sent copies of the following tender forms and specifications for the Victorian Government Railways of Melbourne, closing date Nov. 3: Supply and delivery of a duplex boring and turning mill, including complete equipment; milling machine, and 77 miles of 7-strand bare, hard-drawn copper cable.

The Werlich Mfg. Co., Preston, Ont., which has been operating in temporary premises since its plant was destroyed by fire in 1923, has purchased a two-acre site on Bishop Street and is erecting a new plant, 44 x 60 ft., one-story, with a boiler room, 20 x 45 ft.

The Dominion Cartridge Co., Brownsburg, Que., will build a factory to cost \$10,000.

The Skinner Co., Ltd., Gananoque, Ont., manufacturer of automobile accessories, hardware, castings, etc., is having plans prepared by W. B. Galbraith, architect, #15 Yonge Street, Toronto, for the erection of a plant to cost \$80,000.

Plans are being prepared by the Mistassini Power & Paper Co., Mistassini, Que., for the erection of paper mills to cost \$10,000,000.

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The Massey Harris Co. has awarded a general contract to A. J. Cromar, 448 Colborne Street, Brantford, Ont., for the erection of a tool shop in that city to cost approximately \$50,000.

The John V. Gray Construction Co., Ltd., 541 Queen Street, Toronto, has the general contract for the erection of a brick plant for the Leaside Brick & Land Co., Ltd., Leaside, Ont., to cost \$70,000.

The Canada Paper Co., Windsor Mills, Que., has started work on an addition to its mills to cost \$150,000. The Newton Construction Co., Sherbrooke, Que., has the general contract, which will include an addition to the finishing room, new machine room, beater room and shipping room.

Western Canada

The sawmill of the Empire Lumber Co., Youbou, Cowichan Lake, B. C., was damaged by fire with loss to building and machinery of \$35,000.

The Western Canada Pulp Co., Ltd., Edmonton, Alta., contemplates building a local plant to cost \$50,000.

L. A. McElroy, president and general manager United States Horse Shoe Co., Erie, Pa., confirms the report that he has purchased the plant of the defunct Canadian Western Steel Corporation, Medicine Hat, Alta. No statement has been made as to the disposition of the works, although it is expected that the plant will put it in operation again.

The Alberta Refineries, Edmonton, Alta., are preparing to double the capacity of their plants from 750 to 1500 bbl. per day. Some equipment has been ordered and the remainder will be purchased at an early date. It is proposed to install a cracking unit, possibly using the Double Dubbs system.

Foreign

THE Pioneer Mill Co., Honolulu, Hawaii, has authorized plans for the construction of a new steam-operated electric power house to be used in connection with an irrigation enterprise for sugar cane development. The company has arranged for a bond issue of \$1,500,000, the bulk of the fund to be used for the project.

The Victorian Government Railways, Melbourne, Australia, are asking bids until Nov. 3, for a number of heavy machine tools, including duplex boring machine and turning mill, milling machines, etc.

American interests, represented by Hugh L. Cooper, head of Hugh L. Cooper & Co., 101 Park Avenue, New York, consulting engineers, have been offered a concession by the Russian Soviet Government for the financing and construction of a proposed hydroelectric generating plant on the Dnieper River, to cost between \$40,000,000 and \$50,000,000, designed to furnish electric light and power to the entire Ukraine. The enterprise will require from four to five years for completion. Col. Cooper is now abroad making a survey of the Government's plans.

Officials of the Amerada Corporation, 65 Broadway, New York, operating the Amerada Refining Co. and the Amerada Petroleum Co., have formed the Esperanza Petroleum Corporation, capitalized at \$1,000,000, to operate oil properties in South America. Initial operations will be devoted to the district of Cajigal, State of Anzoataguil, Venezuela, totaling 232,000 acres, for which a leasehold has been secured, and about 60,000 acres of oil properties near Lake Maracaibo Venezuela. The work will include drilling, pipe lines, storage and distributing facilities.

Two projects are maturing in Finland for the construction of paper and pulp mills. The larger enterprise, to be carried out by local interests, provides for a paper mill and pulp works in the northern part of Finland. The other project is for the construction of a wood pulp mill in conjunction with an existing saw mill, to utilize the refuse of such plant. The work will include a power plant. Information at the office of the Bureau of Foreign and Domestic Commerce, Washington, under Reserved Information, Finland, No. 42049. The American Consulate, Helsinki, Finland, Emil Kekich, trade commissioners, also has data.

The Sharon Steel Hoop Co., Sharon, Pa., has filed suit in the Federal Court, at Detroit, Mich., asking that a receiver be appointed for the Detroit Range, Boiler & Steel Barrel Co. In the petition, it is set forth that the defendant company owes the Sharon company \$48,308.36, that lack of harmony among officers of the Detroit company has resulted in waste and inefficiency and that one of the inactive officers has been withdrawing large sums of money to the prejudice of creditors. It is also charged that the defendant company sustained losses of \$72,000 from operations during the first six months of this year.

THE LAST WORD

(Contributed by the Reader Service Department of the Iron Age Publishing Co.)

In France, Dr. Moldenke witnessed women operating overhead traveling cranes in large steel works.—THE IRON AGE, Sept. 16, page 805.



You can see that without crossing the Atlantic. One of the largest machine tool builders east of Ohio has had women operating the traveling cranes in his plant ever since the war. He says that for this work they are more alert and dependable than men.

Once upon a time a theory was enunciated to the effect that business was normal in this country if 60 per cent or more of the blast furnaces were in operation. Below 60 per cent meant subnormality. This theory had and still has considerable vogue among those interested in the stock market.

On Sept. 1 the number of furnaces in blast was below the deadline, 213 of a total of 369, or 57.7 per cent, being in operation. Steel output last month set a new high record for August, and railroad carloadings are making new records.

Do we hear a suggestion that the deadline be lowered?

The passing of the gilded curlicues and filigree doodads on machine tools, locomotives, typewriters and assorted other mechanisms, is observed but not mourned by Dean Kimball. Succinctly, he remarks, "As a machine becomes more purposeful, it becomes more beautiful."

This truth is not restricted to machines. May not speech, literature, architecture and human beings themselves be included?

Where, oh where, are the golden-tongued orators of yesteryear, the house with \$350 worth of gimcracks on the piazza, the man whose flowing pen dripped humming birds, the advertisement with eight sizes and ten fonts of type, and the lathe with the carbuncled legs?

"To gum or not to gum. * * *

Here illustrated in miniature is a specimen of the reader slips furnished free to IRON AGE subscribers, so that a single copy of the magazine may serve many readers.

For ten long years these convenient little slips were furnished ungummed. But last March this brilliant thought crashed through our mind, "Why not gum them and save our subscribers the bother of reaching for the paste pot?"

And so they were gummed. "Foolish!" exclaimed the pessimistic member of this organization, "the hot, damp weather probably ruined them all, by causing them to stick together." So we asked 150 subscribers if they had had any trouble. "No," they answered unanimously, "we like 'em gummed."

Gummed they shall be. If you want a new supply of gummed slips, send the list of readers to 239 West Thirty-ninth Street, New York. A. H. D.

This copy of THE IRON AGE is to be returned to	
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The above names are to be printed on the slip.	